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# The sweet satisfaction of *sangharsh*

Between CES, Startup India and this whole Free Basics fracas, I hardly got time to do anything else this month. In fact, in hindsight I can safely say this was an extraordinarily busy issue. To blow off some steam I figured I'll build myself a new PC. It may sound odd to some of you, and believe me this is not a humblebrag or an attempt at upping my geek cred, but I genuinely find the activity quite meditative. I take my time with it, too. Apply the perfect amount of thermal paste, get the wire management exactly right, screw those HDDs properly in their racks – you know, the little things.

Now in an ideal world, tech is supposed to come into our lives and make things better. But sometimes things just don't pan out the way you want. With this new PC, I remembered I had an old Windows 8 Pro upgrade key from 2013 with me that I never ended up using. So I thought why not install Windows 8 Pro and use the key, upgrade to Windows 8.1 and then eventually move up to Windows 10. Simple enough, right? All it needed was a night's worth of downloads and a couple of restarts at the most. Or so I thought.

Microsoft had other plans for me.

First, the upgrade key wouldn't work on a fresh install. I clean installed Windows 7 and proceeded to upgrade to 8 Pro. So far so good. Now came the tricky part. As it turns out the upgrade to 8.1 doesn't come through Windows update the way it normally should. Instead you need to do it via the Windows Store for some unfathomable reason. No big deal. Let's upgrade!

Not so fast there. Windows wanted my 8 Pro installation to be up to date before the 8.1 upgrade became available in the store. After downloading 198 important updates the system proceeded to restart. Only a handful of updates installed successfully and the rest failed. After trying multiple times with each download and restart cycle lasting about two hours because of the sheer number of updates, I finally searched for a solution on the official forums. Turns out this "Failure configuring Windows updates. Reverting changes" error was a known issue. Microsoft even released a separate tool called the "Windows Update


Troubleshooter" to fix it. To cut a long story short, after conjuring up multiple conspiracy theories about Microsoft's dark side, I eventually got hold of a batch file from tech support and the updates proceeded smoothly. Ahh I can still feel the endorphin release when finally that Windows 10 start screen greeted me.

There is definitely a great deal of joy to be derived from putting things together with your bare hands. Similarly there is also a great deal of satisfaction that comes from having struggled to get something working and then finally enjoying its benefits.

Could there be some primal lizard-brain reward-loop at work here? Possibly. I distinctly remember experiencing similar joy having tamed a particularly finicky X58 motherboard a couple of years ago. That board drove me up the wall. It was so moody that I actually authored an in-house guide to making it work. Guess what I titled it? Yup "*sangharsh*". Forgive me but with my limited vocabulary in both languages I somehow felt "struggle" isn't a perfect substitute for "*sangharsh*". Struggle seemed to me to be the act of toiling irrespective of reward while *sangharsh* has a connotation that is akin to fighting the good fight towards a positive outcome.

Would I ever want my things to "just work" the way devices and services within some ecosystems are purported to function? Yes definitely, I'm not a masochist. For example with my TV viewing experience I want all my streaming and connected devices to just enable the lazy lout within me to revel blissfully in audio-visual rapture.

But a little bit of tweaking, tinkering and *sangharsh* just makes my tech-life all that much more lively.

How do you like your tech? Working straight out of the box, or with a little err...character? 



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**"There is a great deal of satisfaction that comes from having struggled to get something working and then finally enjoying its benefits"**



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# Does science need rescuing?



**Jayesh Shinde**  
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**"Whatever the scientific community decides, we shouldn't forget that science is unique amongst all pursuits of the human race"**

In a time witnessing rapid technological advancements, we reap the rewards of yesteryear's scientific breakthroughs. There's a growing interest in science now than ever before, both in advanced as well as developing nations of the world. Merriam-Webster's online dictionary saw a 176% spike in search terms for the word "science" three years ago. According to Google, more people from countries such as India, Ghana, Nigeria, Philippines and other developing economies seem to be interested in the definition of science online. There was never a better time in history to be a science nerd than now, especially in the West (or developed economies) where scientific and technological breakthroughs are seeping into the larger cultural consciousness.

Just look at 2015 – events such as the Pluto fly-by, irrefutable evidence of water on Mars, and SpaceX's historic controlled landing of a rocket returning from space not only grabbed international headlines but led to a larger global dialogue thanks to memes, jokes and a broader social commentary. All these things wouldn't have been possible without years of painstaking scientific enquiry.

But is there a point beyond which scientific enquiry itself begins to lose its meaning? Some new and popular scientific theories (yes String Theory, I mean you), just aren't testable, don't make real predictions, and aren't even falsifiable. Don't get me wrong, there's nothing wrong with taking leaps of imagination, even in science. Einstein did thought experiments, and ended up giving us the most beautiful scientific advances since Newton! However, when theories have been around for 40 years and still can't make predictions, still are purely mathematically based with no grounding in testable reality... well... people are going to start to question it then.

This is exactly what happened in December 2015. I read an interesting article online (<http://digit.in/ScienceDebate>). Some of the world's foremost scientific thinkers and particle physicists assembled in a Munich university hall for a three-day conference debating the need to tackle a growing divide in the scientific community at a higher philosophical level. The questions they tried to answer were quite fundamental: What is science and what isn't? And should progress cease simply because scientific theories haven't been proven yet?

The answer to both these questions, as you would've guessed, is complicated.


At the Munich debate, the merits and demerits of overindulging in the current grand unification

theory of all particulate matter was questioned and weighed. As always, a recurring bone of contention within the scientific community since its proposition, string theory continued to divide camps. According to its detractors not a single piece of verifiable evidence has been gathered to support the scientific validity of string theory, as almost all of it is just mathematical elegance with virtually no physically justifiable component – yet. What's more, physicists eager to leave their mark are trying to come up with new theories built on top of string theory, with the same fundamental problem. Castles in the air built on top of other castles in the air?

Perhaps it's time to start finding better labels for theories that can never be proven or disproven in the foreseeable future. Maybe they should be meta-sciences, or non-science until they find a way of predicting something measurable (which would also give us the ability to prove or disprove them).

We're also starting to hit natural boundaries. The LHC and other particle accelerators are hitting the detection boundaries of the very small. Our most advanced telescopes have hit a physical barrier of how far into space (and the past) we can look. We're literally held captive by ignorance, because we can't seem match the universe's highest and lowest magnification levels! Perhaps then, this needs us to take a few flights of fancy in order to stay at the cutting edge of understanding, but then it also opens up many chinks in the armour of science, which many others are quick to exploit, and then use that to disregard science altogether.

This is exactly why the discussions in Munich were of utmost importance. Whether theoretical physicists and experimental physicists can find an uncomfortable (but necessary) middle ground to co-exist, we shall see. This would at least give us a basic definition of what "science" really is.

Whatever the scientific community decides, we shouldn't forget that science is unique amongst all pursuits of the human race. The sanctity of science needs to be preserved beyond everything else, we cannot let it get maligned at any cost. It's up to modern and futuristic technology to step up its game and rescue science. Who will rise to the occasion? 

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## ON THE DVD

### CES 2016 Highlights

Another year at CES saw the release of a plethora of products across a wide range of categories. If you are as psyched as we are about the influx of the latest gadgets in the market, we have you covered with all the important announcements from the keynotes of various companies. Binge through hours of product showcases, giving you a glimpse of the cool upcoming products.

- Intel Keynote
- NVIDIA Keynote
- Qualcomm Recap
- Snapdragon Sneak Peek
- Samsung Keynote
- Sony Conference

### Remix OS for PC

Built on the Android-x86 project, Remix OS for PC unlocks previously unseen facets of the OS and introduces a whole new range of versatility to how and where you can Remix. This is what Chrome OS should have actually been.

### Visual Studio Code

Developed by Microsoft, Visual Studio Code is an open source code editor. It includes support for debugging,

embedded Git control, syntax highlighting, intelligent code completion, snippets, and code refactoring. It's time to refresh your old text/code editor and take Visual Studio Code for a spin.

### Gaming Clients

- Desura
- Game Jolt
- Origin
- Play Fire
- GOG Galaxy
- Steam
- Uplay

### Indie Games

- Double Kick Heroes
- Forklift Man
- Ira - Act 1: Pilgrimage
- Maddening Relapse2
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Loud, but no roar



# Bubble. Meet Pin.

**Y**ou'd have to be living under a rock to not be aware of all the hullabaloo surrounding this Free Basics thing. Personally, I don't care whether Facebook wins or loses, because I know India loses no matter what. Neither side really cares about anything but making money or a name for themselves.

This is 2016! Too many of us are sitting around planning our technology purchases for the year, making a list of which companies we will throw money at, whilst playing armchair critic by telling those same companies that they shouldn't give reduced connectivity to poor Indians (who we don't know anything about), because that isn't acceptable by our rather high standards. "It's against neutrality!" we scream, while we waste more food today than some of these poor people will eat in a week! Well, I'm pissed off enough about this to want to pop a few bubbles.

The net isn't neutral. It never was.

Wake up. Smell the rubber that all of these companies have burnt when zooming ahead while you sit here on your backside in neutral, going nowhere!

The net started in the US. It wasn't neutral then because it was geographically locked. Then it spread to more places, but it was locked in by high costs associated with getting a PC to get online. When that ended, it was expensive smartphones, now it's data plans. All barriers that have prevented a poorer section of society than the ones online already are gradually overcome, and that's how it should be. If the net was free to all, a basic right, then it would be neutral. With more than half of the world still without any access to the web whatsoever, there's nothing neutral about it, yet. Poverty isn't going anywhere, so if you think making bandwidth cheaper is going to get 100% online, you were probably dropped on your head as a baby.

Different countries have different norms. On a visit to Singapore, I got a tourist SIM that had a 100 GB data limit. Yes I read that figure many times too. 100 gigs, on a phone, with proper 4G speeds, for a measly ₹750! No Indian would call that neutral? At a friend's house I did a speedtest and got 120 Mbps down, 60 Mbps up. He has a very standard plan. Singapore also has Facebook-only, WhatsApp-only, etc., plans for cheap, so not exactly a beacon for neutrality.

You search for videos on Google, the search results are predominantly from YouTube. You try and send a Telegram link to someone on What-


sApp... doesn't work. Videos from YouTube load so much faster than any other site, because most ISPs have YouTube caching. Google searches are almost instant because they have server farms and hardware all over the world, most probably inside your ISP's data center as well. A process they call peering. This is neutral?

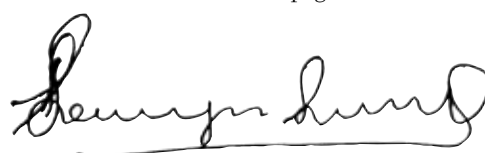
I know people like to choose the definition of neutrality that best suits them, so they will start talking about data packets and how we shouldn't discriminate against poor innocent data packets... poor innocent people, sure, discriminate away, but don't you dare mess with our data packets from Pornhub!

You think you can compete as a startup in any of the established fields? Really? You think big companies want to change the status quo and risk upsetting the apple cart? This version of the internet that still has cost barriers for adoption of a much poorer section of society actually works well for them. Your search startup is never going to match Google in terms of efficiency or speed, or anything really. You may have a way better algorithm, but your best hope is to be noticed enough to get bought over by Google and assimilated. This is neutrality?

Every site, every forum, everything you do online is not neutral. Wikipedia Editors are superior to you or me. On the Digit forum we have moderators who have "power", ditto for every site with users.

Last month's cover story told you about disruptions, and how they cause established companies to falter and new startups to blossom... this only happens when something fundamental that we take for granted changes. Perhaps the inventor of the Facebook killer will get online using Free Basics. Now wouldn't that be ironic?

You need to let go of this notion that the internet is in the best form that it will ever be in. Neutral is relative, like everything else in life. Today's neutral is tomorrow's backwardness. The current accepted norm will seem savage in a decade. Things change, and there is merit in trying to keep the internet open, or trying to make it free, or a basic right, etc. But if you still think the net is neutral, I'm going to need a much bigger pin than what can be fit into this page... 




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Executive Editor  
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**"Your search startup is never going to match Google in terms of efficiency or speed, or anything really... This is neutrality?"**

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## PRODUCTS REVIEWED THIS MONTH

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 Acer Switch 10  
 Altec Lansing LifeJacket 2  
 Apple iPad Pro  
 Brainwavz Delta  
 Canon PowerShot G9X  
 Creative SoundBlaster FRee  
 Dell Precision 5510  
 DIGISOL DG-HR1070MS Router  
 HP Envy 13  
 HTC One A9  
 Lenovo X250  
 LeECO Le 1s  
 Live SB 2444HD TV  
 OnePlus Icons  
 Seagate Backup Plus

### Comparison: Gaming Monitors

Acer XB240H  
 Acer XR314CK  
 Asus MG279Q  
 Asus PG278Q  
 BenQ RL2455HM  
 BenQ RL2755B  
 BenQ XL2420G  
 BenQ XL2430T  
 BenQ XL2720Z  
 BenQ XL2730Z  
 BenQ XR3501  
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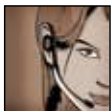
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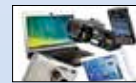
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**DGT**

All the latest lifestyle technology, gadgets to drool over and gizmo porn like never before. Desire, Greed and Temptation ahead...

**Brave Browser**

JavaScript creator comes up with a secure browser to stop snoop advertisement companies. <http://dgit.in/StopAds>

✉ Minion Stinkbrain reporting:

Hi there mighty Digitians. First contact from Minion. I am a gaming-addicted person. I managed to infect my classmate with the gaming virus through your incredibly awesome SKOAR!. Now he begs me for a look every month. I don't let him go easily. I make him do dumb things till I am satisfied. He still doesn't give up. I like Siddharth's and the Big Daddy's facial style. Sorry Robert, I can't comment on your hairstyle, it's the BALD truth. I know you are all busy trying and testing products but for God's sake OVERHAUL THE D\*\*N DVD INTERFACE AND THE WEBSITE. Overheat controlled, proceed normal operation.

Minion out.

Small question. Is there somebody in Digit who is a Keralite? If there was, it would make me proud.

– Nediyedath Vishal

✉ Transmission received..

Greetings Stinkbrain, thy Overlord is pleased with your vigour for infecting your mate with gaming. Carry on with your quest, for one day thou shalt be rewarded. Your affinity for hair has been flagged on our systems and the remarks will be relayed down to the relevant sentient beings you have mentioned.

Initiate process - Revamp /dvd / website

ETA - Soon..

Coolant Status - Active

Systems Status - Normal

Shutting transmission..

Yes there are Keralites in Digit.

– Supreme Leader Digit

✉ Hey Digitizers!

I am Shivashankar and I am 14 years old and it has been a bit more than one year since I started reading this mag. When I was seven years old all I would do is search for CDs, load them into my PC, and play games that seemed interesting. One evening my dad told me to read Digit and said that it was better than Chip. The next morning, how Anakin's lightsaber was handed down to Luke, he gave me the 2014 Collector's Edition Digit. And that issue took me by storm since it was much more friendlier and casual than

## Feedback for the January 2016 issue of Digit



Chip. I wrote the Nat'l Cyber Olympiad Finals Level, and by the help of Digit, I ranked 2nd in the state and won 2.5k. From then on, I became a regular reader of Digit, not just because of the friendly approach, but also due to all the fun facts you put in each issue.

I loved the Disrupt cover story a lot, and loved the Star Wars poster even more. The Human Brain dmystify was also superb. Saw a lesser number of typos, well done! And I really, really liked the Gangsta Granny article. You should do that more often.

Now let me list out all suggestions:

1. Could you guys do a comparison of MP3 players? Being an audiophile, I loved your portable speakers review and I really want to see an MP3 player showdown as I am thinking of buying one.
2. Can you put in posters of racing from time to time? I didn't quite like the NFS poster that much.
3. I know for a reason that most of you over there (if not all) are huge Star Wars buffs (I look at last month's Digit Diary says it all). Why not add a few Star Wars related stuff also in there? (Last month's letter of the month #2 winner a.k.a Rohan Shah, the easter egg finder, is one of my

best friends and he just wouldn't stop bragging. So, can you not send his T-shirt? Nah, just kiddin'!)

Now for the "issues" (though I wouldn't call them real issues, just try and negate them. Makes the mag perfect):

1. The adhesive problem: Yes yes, I know that you guys are working on it and will bring out a solution for it. Right now, instead of trying to pull it out, I just cut it using my scissors.
2. DVD UI: It kinda is outdated. I mean, Apple stopped putting that square-inside-circle button in their devices long ago (except the iPod touch, which uses the same button)
3. Typos and other miscellaneous mistakes: I have seen a decline in typos recently, so good job for that! And in the Zero1 awards, many smartphones had their pictures totally mixed up, what happened?

And now, for some small chit-chat before I end this message.

1. What gaming genres do you mainly like at Digit? And how do you guys spend your weekends when you aren't reviewing some cool gadget or playing your a\*\* off skoar-reviewed games? Alright. Enough chit-chat. Waiting for your reply.. Sayonara!

– Shivashankar





## No app storefront ahead?

Google is now allowing you to install apps directly from the search engine results without being directed to Play Store <http://dgit.in/SEInstall>



## YouTube Unbanned

Pakistan lifted the ban from YouTube after 3 years and now would look at a content filtering model to keep a watch <http://dgit.in/YTUnban>

Inbox

4 Good stuff Shiva. By learning about your journey of becoming a Digit reader, we pride ourselves for being able to deliver content good enough to cater to different generations. It's overwhelming stories like yours that motivate us to churn out quality content.

Let me respond to your suggestions:

1. An MP3 player comparison will surely be interesting. This directly enters into our vault of ideas for future considerations.
2. We try to cover as many genres as possible so that we can keep all our readers who have different tastes, happy. Since NFS is already done, a poster on racing will see the light a few months later.
3. Spot on Shiva. Yes, most of us are Star Wars buffs. If you want to earn your bragging rights, here's a hint: there's an easter egg on page 80 and 81 (combined) in the Jan magazine. We also follow other fandoms and we do try to include subtle references to them in the magazine. Keep your eyes peeled on every page, Young Padawan. (None of you get a T-shirt. Nah, jus' kiddin'! Or, are we?)

Coming to the issues raised:

1. The intention is to deliver the magazine in a pristine condition. Past experiences have made us realise that the adhesive needs to be strong enough. But we do understand your problem and will surely consider a solution to this.
2. Yes, we agree that the DVD UI is embarrassingly outdated hence, revamping the UI has been pushed to the top of our priority list.
3. We are trying to cut down on typos in our magazine and we'll surely try to eliminate any kind of error in the future.

As for what genres we like to play, I'm pretty sure you're going to like our Feb SKOAR! cover story. Other than that, the most played gaming genres at Digit includes FPS and MOBAs.

– Abhijit

✉ Hey guys! I'm from a middle-class family and that too from a rural area. I

✉ I'm an officer of the Indian Revenue Service and a long time admirer of your magazine. I've been hooked to your magazine ever since 2002-03 when I was in the 8th Grade and the only thing I cared at that time was the 'Playware' and 'Mindware' CDs. However, I got to admit that I was not a regular subscriber but now, I am indeed a regular subscriber and the experience has only been ever enriching.

Moving on to suggestions/criticisms; I really do not like the clunky interface of the DVDs but you guys receive enough mails about that already. Also, the website interface – though it is rich in content, it comes across as very unorganised even though I know that is not the case. One major beef I have with you guys is the complete and total ignorance of Windows Phone OS. You really need to do some minority appeasement here guys. Jokes apart, I really feel it is your responsibility as a Magazine. Thing is, it really pains me to see even scores of reviews, featured apps etc. without any attempt to even include Windows.

first saw your magazine five years back and I couldn't take my eyes off it. Unfortunately, I couldn't buy it as I was not able to afford it. I don't remember the price, it was Rs 150 or so. But that was quite high for a mag for a person like me. The next two months, I watched your mag hung in the shop. The cover was so attractive so drooled like a dog. After bad times of struggle with my family, I managed to get Rs 100 (Pssh! I told them the mag was only 100!). I somehow managed to get the rest of the money and bought the magazine. After flipping through all the pages, what I could find was the images of gadgets that I could never get my hands on. I didn't have a PC to check the DVDs. The next two months, I read this same mag over and over till I memorised all the words in it. Slowly, I became an avid reader of Digit. Today, I'm an 18 year-old

## LETTER OF THE MONTH

A quick shout of kudos to all the team members of Digit who toil hard to make the magazine work. SKOAR, dmystify, Fast Track and all the wonderful mag sections! Lastly, let me sign off by recording a big thank you to you guys for helping me stay up to

date with what matters most in the modern tech world. Being a Government servant, trust me, it's a breath of fresh air after being caught up in the files all day. Keep doing the good work and I sincerely hope you take up my point about Windows Phones in to consideration.

With warm regards,

– Visakh K



4 Guilty as charged. We have indeed been neglecting Windows Phone.

But we'll get right on it. Please look out for some WP content in the next issue. Meanwhile, you can check out the two stories we recently did for Windows Phone on our website.

1. <http://dgit.in/10WPApps>
2. <http://dgit.in/2WPAccessories>

– Siddharth

boy who has tested all the top gadgets available on the market today (but still can't afford any of them!) and a hardcore gamer (That too, I didn't buy). And all my friends refer to me before buying any gadget! Thanks to Sid and Robert. Your articles were the most inspiring ones I have ever read. Oh ya, and others too who worked behind this great piece of Art (Err, I mean Digit!). You guys have helped me a lot to raise me from zero to hero in my community. Once again, thanks Digit for your great work which will help many others like me. It's Great, Awesome, Cool. Love you all at Digit!

– Febin S

4 Wow Febin, that was a really touching story. Hats off to your sir, for sticking through tough times, but not letting go of a desire. More than Digit, I think it's





## Perfect T-shirt size?

Database company Threadbase analyzed 800 T-shirts for creating perfect T-shirt size chart. <http://dgit.in/T-shirtSize>



## Gutting out

Bacteria inside your intestine could be engineered to fight against metabolic disorders. <http://dgit.in/GutOut>

that attitude of yours that has made you who you are. If anything we are proud to have been a subtle influence and a companion on your journey. We love you to, and we wish you the very best in everything you do. Keep reading and keep sending us feedback.

– Robert

✉ You guys really work hard. I seriously appreciate that. Hats off to you, I can probably say no more about you. Keep up the good job people! :)

I wanted to ask you for something. I hope you don't deny it. :D I bought the Collector's edition from the store. But unfortunately someone stole the main magazine and till now I am regretting for taking it to school. For that, could you please send me the electronic version? I am not buying Digit for some time due to my boards and I hope you understand my problem.

And the second one (last one), I saw Digit's back cover in a store, and I found that you were providing sample papers. Well, I am now in class 10 CBSE, about to appear the boards and it would be really sweet if you could send me some of those to my mail. I hope you will understand my desperation and send me the same.

– Kangkan Talukdar  
(Die-hard fan of you people. xD)

4 Done! Best of luck with your board exams.

– Siddharth

✉ First of all, Happy new year! I'm 13 and everyone in my friend circle is a fan of Digit.

I'm writing this for you Siddharth bhaiya. I love what you write on the Static Page and always start with your editorial. I loved the Oct and Dec one's particularly. And for Robert Sir, I loved his column in September issue. Sorry Jayesh bhaiya but I'm less fond of reading your column, but don't worry my three friends love it. The three of you (Siddharth, Jayesh and Robert bhaiya) write well but in my opinion Siddharth bhaiya writes best. Thanks for providing the dmystify as it helped me a lot to improve my GK, and please keep feeding it more.

I need some help: I want to buy an Xbox One console but my father believes that console gaming, computer gaming and mobile gaming are not good for health and addictive. I know he's right but I don't play other than weekends. How can I convince him?

Also if I buy Xbox One Gears Of War edition would I be able to unlock all other parts? As we're way past Dec 31. If all games are unlockable then which Xbox one console should I go for and when? Sale time? Which bundle will give me most games. I don't want Halo.

Big shout out to Gangsta Granny cause I've already shown her point of view to my dad.

Hope you reply.

– Ashay Maurya..

4 I am truly flattered, humbled and proud all at once. Thanks Ashay you made my day! In fact you probably made my year, and so happy new year to you too!

As for your Xbox One dilemma, my honest answer would be forget consoles and join the PC Master Race :-)

Yes that doesn't answer your question but fear not, for one of our biggest gamers is a console fanatic. Your letter really struck a chord with Sameer from the web team. It reminded him of his own childhood and the struggle he endured to get access to his favourite games. Here's what he has to say:

Anything in excess is bad and the same can be said about gaming. You have to acknowledge this fact in front of your parents first and reinforce the fact that you understand it and will stay in healthy limits while gaming. You need to make your parents understand the fact that you're a responsible gamer, not tempted by its addictive tendencies.

Seriously, gaming is addictive and we have spent up to 15 hours at a stretch gaming and from personal experience we can tell you that it's not a great feeling throwing up after hours and hours of staring at a screen. Try and explain the fact that gaming is a medium of entertainment and is in fact bigger than Hollywood in some respects. Tell him the disadvantages and health

hazards of overdoing things and that you are aware of it and will refrain from it. Hopefully, your dad will understand your argument if you present it with conviction. Here is a link bundle with a bunch of links that'll help you strengthen your case: <http://dgit.in/GoodSideOfGaming>. All the best!

The bundle you mentioned was only valid if you Played Gears of War Ultimate edition before 31st Dec 2015. Go for the bundle that fits your budget and also the games you like. The Xbox One Gears of War: Ultimate Edition Bundle is for ₹34,990 which is one of the cheapest and you get gears of war which is an awesome game. If you like racing games, you have the Xbox One Forza Motorsport 6 1TB Console for ₹39,990. And then you have the Xbox One (500GB) FIFA 15 Bundle at ₹34,990. Don't go for the Assassin's Creed Unity bundle simply because Assassin's Creed unity isn't a great game.

That's it for now Ashay. Do keep in touch and feel free to contact either of us if you have any follow up queries

– Siddharth and Sameer

✉ Thank you for the wonderful article and equally wonderful art design on the front cover. Seems like you guys are indeed serious about recent user complaints (including me) regarding the mundane cover stories. Integration of DGT in the main magazine is a good idea but then it takes away some 7-8 pages of Digit. Do care to increase some pages as compensation. I'd be happy if you could add an opinion column in your website. I'd like to read op-ed of other Digitians besides the big three.

dmystify is a great addition, I still have E=mc2 (my favourite dmystify till now) in my purse.

– Bhaskar Joshi

4 Thanks for the feedback, Bhaskar. You're right, we really need to start writing more op-eds online. Let's see what can be done about that. Glad you liked the E=mc2 dmystify. Do write in again with suggestions of what other topics you'd like us to dmystify.

– Robert



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### GREED

For those who just want more than should be humanly allowed, we have enough to satisfy your hunger...

**THIS MONTH:** Guess Connect, IO Walk, Polaroid Cube, Vanderbilt Mixologist Box, Astell&Kern AK Jr and more...

### TEMPTATION

If you're wondering what to do with yourself or how to spend some time getting cultured, this section is for you...

**THIS MONTH:** Sherlock: The Abominable Bride, Star Wars: TFA Visual Dictionary, V-Day treats and more...

### DESIRE > SHOWCASE

## Blade Stealth

Gaming force unleashed!

Razer has announced the Blade Stealth, an ultrabook aimed at gamers. Prices for ultrabook starts at \$999 (approx. ₹67k) and goes all the way up to \$1,599 (approx. ₹1.7 lac). The device comes with a 12.5-inch screen and is powered by a 2.5 Ghz Intel Core i7 processor with 8GB of RAM. The keyboard comes with Razer's multi-hued Chroma Lighting. The base variant of the ultrabook sports a 128GB SSD and a Quad HD screen with a resolution of 2560 x 1440 pixels. The top-end variant comes with a 4K display and a 512GB SSD. The ultrabook comes with a Thunderbolt USB Type-C port. The latter is designed to be used to charge and connect monitors and accessories to the ultrabook.



The Razer Blade Stealth is just 0.52-inches thin and weighs 1.2 kg. To achieve this thinness, Razer had to eschew using a powerful graphics card in the Blade stealth. The ultrabook comes with Intel HD 520 graphics which is adequate for basic tasks as well as for light gaming. To go around this problem, the company has introduced the Razer Core, an external desktop graphics enclosure. It can house most PCI Express graphics cards from NVIDIA or AMD and connects to the Blade Stealth via the Thunderbolt USB Type-C

port. By connecting the Core enclosure to the Blade Stealth, users will gain four additional USB ports as well as an Ethernet port, not to mention improved graphics performance. This setup also makes it easier for users to upgrade their graphics card whenever they want. The company has not yet revealed the pricing or the availability of the Core graphic card enclosure, but the Razer Blade Stealth is up for pre-order and will start shipping from this month. The laptop will be available in retail stores by February.



## Zoook Moto69

Zoook's safety baton has managed to bring fear in the hearts of the bravest in our test labs. The sturdy aluminium frame of this peculiar high-handed safety device is quite rigid and the knurled portion at the bottom offers a good grip.

Along with the stun gun capable of delivering 9 million volts of electricity, it also comes loaded with a flashlight and laser. If you're wondering how powerful the stun gun is, let's say that it's capable to make incessant abuses fly out of your mouth.

## Kolibree Smart Toothbrush



Taking Bluetooth too literally, the Kolibree smart toothbrush lets you play games on your smartphone or tablet that you and your kids can enjoy while brushing. What's next?

## Sony Walkman A26



Unlike last year, this year's Walkman from Sony is less expensive, does not run on Android, and solely focuses on Hi-Res audio quality supporting Apple Lossless and FLAC files.

## Ideacentre 610S



The Ideacentre 610S is a small and cute-looking PC with a built-in projector, boasting of a powerful 6th Gen Intel Core i7 processor, NVIDIA GTX 750Ti GPU, 16GB of RAM, and upto 2TB of storage.

## Nikon KeyMission 360



This action cam is waterproof up to 100 feet, capable of recording 4K, 360-degree videos, and is encased within a rugged body with shockproof rating of 6.6 feet.



## SmartBowl

While we're on the topic of health tech, who says it's only to do with humans? Pets need to be healthy too, especially if they aren't getting enough exercise. One way to ensure that is to feed them through this Petnet SmartBowl which claims to monitor your pet cat or dog's diet – as long as you feed them through the bowl and nothing else. After you key in your pet's age, weight and activity levels, the Petnet SmartBowl will tell you if you've added just the right amount of food for your pet – it will also warn you (through LED indicators) whether you've poured less or more food, given your pet's health profile.



## Polar Balance

We've spoken about Withings and Fitbit weighing scales in the past, but at this year's CES, Polar – a Finland based performance device manufacturer – has unveiled a smart weighing scale that undercuts offerings from its competitors and offers unique features.

At \$99, the Polar Balance smart weighing scale looks like an essential health tech device to own this year. It looks small and cute, syncs your weight measurements onto your phone. But it also works as a fitness coach by letting you add weight goals. So every time you stand on it and measure your weight, the Balance smart weighing scale can tell you how much exercise or activity you need to do to meet your fitness goals on a timely basis.

## TechnoGym

Nothing helps getting in shape better than good old cardio, and TechnoGym is trying to woo consumers towards their health tech products in a big way. TechnoGym's showcasing its range of treadmills that comes with a Running Music feature, which essentially matches the pace of your walk / jog / run on the treadmill with a suitable song from your personal music and genre – automatically! Yes, TechnoGym's claim is that once the treadmill has access to your music collection (through a built-in cloud service), users don't have to worry about the hassles of curating their playlist all the time – the treadmill will do that for you. Spotify already does this to some extent, but not a treadmill, which is a first, according to TechnoGym.



## Hoverbutler

Unlike hoverboards (that don't exactly hover) that transport the user from one place to another, this new hoverbot can transform into an actual robot. The rideable robot comes with a display that can make expressions and stream videos. That's not all – the cute little guy can also be fitted with arms to perform tasks, like opening doors. When this was done during the demo, the robot said, "are those my arms? Awesome!" It uses Intel's RealSense technology to keep track of the world around it, and the company says that it will be open-platform, starting second half of the year. Segway may be planning to make the Hoverbutler commercially available, and the developer kit for the same will also be available in the second half of the year.





## Sony PS-HX500

Sony couldn't resist joining the resurgence of vinyl records, and coupled with their hi-res audio technology, the company attempts to make it big with the PS-HX500. Contrary to Technics' SL-1200G direct-drive construction, the Sony's turntable sports a belt-driven construction. This means that the PS-HX500 will offer better sound quality over Technics. Sony will let you rip songs from your vinyl to a digital format (WAV files) in high-res quality using a PC software. The conversion will process through the company's DSD (Direct Stream Digital promises to offer better reproduction of sound) native converter, claiming to be the first to do so, additionally supporting double-rate and single-rate DSD file formats. And no, you can't carry this turntable around vying to gain unaccounted hipster cred.

## Super 8

Few of the purist filmmakers including Christopher Nolan, Steven Spielberg, Quentin Tarantino and several others still swear by the use of stock film in their movies. The remake of the Super 8 by Kodak, the original manufacturer behind the legendary camera, will surely pique the interest of established or budding filmmakers, inclined towards making movies in stock film.

Kodak collaborated with industrial designer Yves Behar for the Super 8, which will start selling in Q3 2016 between a price range of \$400 to \$750. Somewhere in 2017, Kodak also plans to launch a lower-cost version of the camera. Although this camera has certain digital functionalities such as a digital viewfinder, you'd still have to develop the film which obviously isn't cheap. Processing the film will cost between \$50 and \$75 per cartridge and Kodak soon plans on providing processing solutions of converting them into digital copies.



## Thermo

Withings, the French wearables giant, unveiled a cute-looking thermometer that scans your body temperature through an infrared beam. It's a very good, non-invasive gadget that makes you rethink a traditional thermometer. It requires you to hold the device against your forehead or temple and wait for it to vibrate, which is when it detects and displays your body temperature on an OLED display.

Through its companion app on the phone, you can track your temperature through the day, week, month and year. Not only that, the thermometer itself allows you to create different profiles for various family members. It's currently unapproved by the US FDA and will go on sale later this year for US \$99.



## SciO

From a highly popular Kickstarter project in 2014 to wowing consumers and tech aficionados at CES 2016, Consumer Physics' journey from prototype to a finished product is finally ready for the world to behold. SciO is the closest thing to a Star Trek tricorder – for food items, though. It's an overwhelmingly tiny and pocketable version of a full-scale lab spectrometer which can pair with your smartphone to give you revealing data about the (un)healthiness of any food item. It pairs with a smartphone (and bundled app) to record data and measurements, after the sensing device (SciO) analyzes chemical fingerprints of a food item under its beam scanner.

Point it at a block of cheese, check its calorie count. You can even point the SciO molecular sensor at plants and vegetables to check the quality of fresh produce in the market, too. Pretty cool.



# Azimut 66

Touted as the world's largest water-sports trade fair, the boot Düsseldorf 2016 is set to be a center stage for the best in yachts and boats. The Azimut 66 has our attention this time and boy, it does look amazing. Part of the Flybridge Collection, it's a mere 20m long yacht packing all the technical and luxury goodness from the classic collection. The flybridge area has been extended to make it more spacious and has been converted into a lounge. The signature shark's fin-shaped side windows stand out on the yacht, which has been designed by Stefano Righini. The hull has been constructed with carbon fibre making it lightweight. The interiors don't fall short in offering a premium experience, and the designer Carlo Galeazzi



has made sure about efficiently using up the storage space. The Azimut 66 will let you cruise the oceans at an average speed of 28 knots although you can push

the maximum speed of up to 32 knots. We aren't sure about the pricing of this masterpiece, but we are definitely sure that we won't be able to afford it.



We are a group of enthusiastic students from IIT, Delhi who are taking electric powered automobile technology to a higher level. AXLR8R Formula Racing Club, IIT, Delhi aims to design a Formula based electric car and participate in FSG16.

But this dream comes with a heavy cost.

Help us and contribute towards innovation.  
Help us and contribute towards technology.  
Help us and contribute to a better India.



[thehotstart.com/campaigns/axlr8r-racing-team](http://thehotstart.com/campaigns/axlr8r-racing-team)

@ axlr8r.racing@gmail.com

f /Axlr8rFormulaRacing

Scan this QR code to go directly  
to AXLR8R's TheHotStart page







## Technics SL-1200G

Joining the list is another highly revered and legendary product among audiophiles and DJs. Celebrating the 50th anniversary of Technics SL-1200, Panasonic has announced two new versions of its direct-drive turntable – the aluminium-cased SL-1200G and the magnesium-cased SL-1200GAE. Among the two, the SL-1200GAE is an anniversary edition limited to only 1,200 units, obviously. The SL-1200GAE is slated to be released by the summer of 2016 while the SL-1200G version will be coming out at the end of 2016.

Both the versions of the turntables will be ditching all the problems faced in earlier versions of the analogue direct-drive turntables. The older versions were hurdled with lower quality sound due to vibrations in the motor caused by the rotational speed, termed as cogging. It incorporates a three-layer construction using heavyweight brass and aluminium elements. A rubber setup in the rear makes sure that the apparatus removes any possibility of resonance by dampening the vibrations. Another distinct difference between the two versions is the aluminium and magnesium tonearms (or stylus). There's no news on the prices yet.

## FFZERO1

The Faraday Future FFZERO1 is a concept car whose design will make you question its viability. The concept itself is testament to the fact that Faraday Future might indeed be the future. Capable of running at 1000 horsepower, the FFZERO1 can reach 0-60mph in less than 3 seconds, and reach a top speed of 200mph, or nearly 360kmph. It features all-wheel drive, with one motor at each wheel. The roof is entirely glass, giving you a glimpse of the white carbon fibre interiors, and the smartphone panel fit into the steering wheel. It has space enough for one person, and the seat has been fit with Halo Safety System – a technology that will rest the driver's head and neck to keep the drive more pleasant, and a helmet that will circulate oxygen and feed water to the driver. The Faraday Future FFZERO1 uses adaptable strings of batteries, from which cells can be removed or added to. The vehicle motors can also be altered between front-wheel drive, rear-wheel drive, or all-wheel drive. Another interesting factor about the FFZERO1 is the way its control panel and instrument cluster is designed. The dashboard uses Faraday Future's "Propeller IP", which curves from around the driver's shoulders and smoothly joins the front panel. The smartphone interface at the heart of the steering wheel is none other than your own smartphone. The Faraday Future FFZERO1 is a stunning look into the future of automation.



## Neorest 750H

Toto, the well-known bathroom and sanitaryware maker, showcased its self-cleaning toilet at CES 2016. Priced at \$9,800 (₹6,53,600 approximately), it is quite expensive, but comes with a lot of features to justify its pricing. The Neorest 750H is a smart toilet that can sense your presence, control the odour around it, and best of all, won't require cleaning for about a year. Toto has achieved this by a combination of technologies. The toilet uses Acti-light technology, which makes use of UV light in tandem with a photocatalytic coating to remove visible and invisible waste. The toilet uses a special electrolysis process, and uses electrolysed water that works as a weak bleach. There are two powerful water nozzles, and the bowl itself has a very smooth surface which Toto calls CeFiONtect.

The list of features is further expanded with the likes of auto lid open/close function, with flush-on-close. It comes with an adjustable heated seat and adjustable spray position, too.



DESIRE

# MOBILE WATCH

*Stylish, glamorous and interesting smartphones are always on the horizon. We take a closer look at what's hot in this space...*

## Huawei MediaPad M2 10.0

The 10-inch tablet with a full HD IPS display has an aluminium alloy full-metal body, available in two storage options – 16GB or 64GB of storage expandable via microSD card up to 128GB. The 16GB variant will feature 2GB RAM in a silver colour variant while the 64GB variant will feature 3GB RAM in gold. Other specifications of the MediaPad M2 10.0 include a 13MP rear camera with autofocus and the front has a 5MP camera. A 6,660 mAh battery powers the entire package. In terms of connectivity options, the device has Wi-Fi 802.11b/g/n/ac, Bluetooth 4.0, GPS, accelerometer and fingerprint sensor. The device is slim measuring a mere 7.35mm and houses four speakers. The speakers boast of Clari-fi Audio Restoration, an Intelligent Power Amplifier supposed to deliver superior quality audio with SWS 2.0 Surround Sound. Huawei says that the audio has been tuned by Harman Kardon. The price of the tablet starts at \$349 (₹23,300 approx.) for the 2GB + 16GB Wi-Fi only variant and the top of the line 3GB RAM and LTE variant is priced at \$469 (₹31,500 approx.).



## Jupiter IO 3

The Jupiter IO 3 is a 3G-enabled smartphone priced at \$299 (₹20,000 approx.). It sports the age-old Android 4.4 KitKat OS. The company claims that the device has 16 hours of battery life. This is thanks to the two batteries that power it — one for the smartphone and the other for the vape (akin to smoking e-cigarettes). The battery is shared, which means that if you don't use the vape, the battery can be used to power the smartphone. A 4G variant of the smartphone is expected to launch for \$499 (₹33,300 approx.), and will hit the US in the coming months. There is no information available about the specifications of the smartphone. There are a variety of flavoured liquid cartridges available, priced at \$15 including mint, peach and coffee. Vaporcade, the company behind the device claims that each cartridge can provide about 800 puffs, or about four packets of cigarettes.



## Le Max Pro

It seems Chinese manufacturer LeTV's Le Max Pro smartphone is going to be the first smartphone to be powered by the Snapdragon 820. The phone was unveiled at the CES event in Las Vegas and comes with Qualcomm's Sense ID fingerprint technology. This technology uses an ultrasonic biometric sensor which, unlike optical technology, can read fingerprints through a layer of glass or metal. The phone comes with a massive 6.33-inch display with a WQHD resolution display of 2560 x 1440 pixels. At the back is a 21MP camera with a fingerprint sensor located just below it. The device runs Android Marshmallow 6.0 and will be available in 32GB, 64GB and 128GB variants. The phone also comes with a 3,400 mAh battery with Quick Charge 2.0 and a USB Type-C port.



DESIRE

# TAKE MY MONEY!

*Here is where we keep an eye on crowd-funded projects that will make you go 'Shut up and take my money!'*

## Skybuds

Where are my earphones? Maybe on the table? Did I leave it in the car? Oh wait, now I remember, they're inside my phone. How many of us reading this are familiar with this daily routine. A lot of us, isn't it? Don't be shocked, all phone cases are not meant for protecting your phones. Skybuds are earphones built to fit inside a mobile case which doubles up as a power bank for your phone. In a world full of gimmicks, it's refreshing to have something which is actually being developed and delivered around true user needs rather than just another



shot in the dark to create nothing else but just empty marketing hype. The buds are totally hands-free and connect via Bluetooth to an iPhone 6/6s and offers no support for other smartphones currently, which is a bit of a bummer to be honest. They are available in three colours – Nimbus Grey, Horizon Gold, Deep Space Black.

## dokiWatch

Child wearables are not a new thing. What is it that makes dokiWatch any different than the rest? For starters it comes with a never-before-seen camera integration for video calling. The dokiWatch also supports 3G calling, GPS locator and a fitness tracker. The GPS locator allows parents to create a geo-fence to keep a track of their child via an app. If your kid steps out of the mapped area, they are just a call away. It also features a SOS button which can be programmed to call their parents in dire situations. But won't restricting them with boundaries make them lazy and unfit? Worry not, doki has you covered with their dokiPet game built



into its custom version of Android 4.4. dokiPet is a Tamagotchi-esque game to keep them on their feet catering to

the needs of their pet. It's a balanced form of intrusion in a child's life which is worth checking out at around ₹11,929.



# Lifeprint

It makes us nostalgic to watch old picture albums. Since the rise of the digital era we rarely go for the printed ones. What if you could evoke those memories back through printed images? Lifeprint introduced a solution for printing Live Photos from your iPhone 6s/6s Plus, GoPro videos or even YouTube videos. If you're wondering what Live Photos, think of them as short animated GIFs that helps you make your picture even more memorable than ever before. Lifeprint's procedure is fairly simple – click a live picture or select a video, connect the device to the printer app as well as the printer via Bluetooth (now supports Wi-Fi) and click print. As soon as the picture is printed launch the app on your phone and bring the photo in front of the camera. Voila! Your picture has come to life. It is priced at around ₹6,598.



## Free Your Feet (FYF)

Traditional shoes are so 20th century! Free Your Feet (FYF) might just be shaking things up with their new space age socks. These woven wool-looking socks takes the 'light on your feet' saying to new heights. These socks are highly durable and light regardless of how they look. The sole is woven out of a fiber called Dyneema which apparently has 15 times more resistance to abrasion than steel. These are also highly flexible and water resistant, so be it mountain climbing or plain old running, don't fret over the risk of hurting yourself. These durable pair of socks will set you back by ₹5,330 and are currently available in long and low cut versions.

# Flip

Wearables, wearables everywhere, but which is the one to rule them all? Medical wearables are trending nowadays and companies are enthusiastically trying to remould them to track every function of the human body. So, how can our ears be left out of the loop? Enter Flip, the new ear medical wearable. According to research done by the Flip team, wrist wearables are not so effective due to the presence of bones, ligaments, tendons and muscles. Whereas the ear is only made of cartilage and blood vessels, making it easier to track even a faint beat of your heart. It obviously tracks steps taken and calories burnt like any other activity monitor but also provides a comprehensive track sheet of calories burnt while doing an activity as well as resting. The flip is priced at ₹9,997 and we are looking forward to try it out ourselves.



## LattePanda

Card-sized computers are gaining popularity. We saw the likes of Raspberry Pi and Pine 64, but to our disappointment none of them could offer what 'LattePanda' has in store for us. Any guesses? If you guessed Windows compatibility, you are almost correct but in fact, it supports a full version of Windows 10. To add to the list, it's Arduino compatible while the on-board Intel Cherry Trail processor is capable of handling a bulk of your day-to-day tasks like a breeze. At a price of just ₹3,260 LattePanda is a steal. Oh man!

### SPECIFICATIONS

**Processor:** Intel Cherry Trail 1.8GHz | **Cores:** 4 | **GPU:** 500MHz | **RAM:** 2GB-4GB DDR3L | **Flash:** 32GB-64GB | Gigabit Ethernet



GREED

## EXAMINED

*What do we do to really cool products that come to the Digit Test Centre for which we can't really write an in-depth review? We examine their pros and cons here and give you a quick rundown on what makes them tick.*

## IO Walk

Glide to your destination. In style.

We haven't invented hoverboards yet, so let's not call them one. IO Walk is smart enough to call it a "self-balancing scooter" and being the first one to launch this amazing device in India, how could we not get our hands on it? Or is it feet? We tried the board for several days by taking turns where a few of us met the ground quite often. A couple of us were able to master the board, so much that we were able to switch feet by jumping and



doing a 180-degree spin. The board says that it's capable of reaching speeds of up to 10 kmph and even though it seems low, it gets really fast when you're standing on the board. We had received the Elite version of IO Walk that housed a Samsung battery lasting for six hours and also a remote control to lock and stabilise the device. We were quite sceptical about charging the board considering recent news about these boards catching fire and hesitantly we put the device to charge, twice and nope, no explosions. It surely isn't meant for long distance travels and only makes sense as a luxury to own. Priced at ₹50,000, IO Walk would be useful for staff at malls or big public places to whizz around. If you're a true hipster, you must be already considering about booking this device. You should actually, since this makes it easier to get your coffee from Starbucks, instantly making you look cool among your brethren.

## Guess Connect

Chic smartwatches be so cool yo!

If you're scratching your head wondering when did Guess start manufacturing watches, it's justified. Guess partnered with Martian to build the Guess Connect, pitched as a fashion-centric wearable. Calling it a smartwatch would be wrong since it only has a tiny monochrome OLED display, a speaker and an LED to alert you about notifications and the connection between your phone and watch. It makes no compromise on design with its elegant and stylish stainless steel case overlayed by a rose gold



finish. The display turned out to be buggy several times, probably because it couldn't handle the onslaught of too many notifications together. Things get interesting and easier with the companion app that lets you select which app notifications you want to display. In short, you get complete control over all the functions of the watch except the analog watchface. Wearing the watch indeed felt like a piece of jewellery attached to our wrist and certainly, it felt good on the hands.



## Polaroid Cube

Polaroid sent us their version of an action camera in the form of a cute little cube. Lazily just named as Polaroid Cube, the tiny camera is capable of shooting videos in 720p and 1080p with a viewing angle of 124-degrees. Being splashproof, the camera holds up against water splashes. It has a magnet on one side which makes it easier to mount on any magnetic surface. The videos aren't sharp due to the low 6MP resolution camera sensor. In low-light conditions, the device shoots really poor videos and images. It's super fun to use!



GREED

# DROOL MAAL

*Get your drool on and behold some of the fanciest, ostentatious and drop dead gorgeous gadgets money can buy. Droolworthy?*



## Vanderbilt Mixologist Box

Calling all whiskey connoisseurs, and of course, wealthy people, there's something to put up in your penthouse or one of your luxury retreat locations. Ralph Lauren is ready to serve you with a limited edition of a compact bar called the Vanderlist Mixologist Box. With only 100 of these boxes slated for production, it heavily reeks of luxury when opened up. Made from Italian rosewood veneer with high-gloss finish and polished nickel handles, on the inside it's divided into compartments along with a drawer

at the bottom. There are a bunch of Ralph Lauren accessories stuffed inside including a 24% lead crystal ice bucket, ice tongs, silver-plated stainless steel Boston shaker, Boston strainer and a cocktail knife for those cocktails, and several other bar essentials. Also, you'll be getting (if you pay a hefty sum of around ₹3 lacs) a hickory-wood cutting board, maple wood muddler and a mixology book with a crocodile-embossed-leather cover. To beam off the rarity of this desktop-bar, a metal plaque will be attached inside, engraved with "Ralph Lauren Limited Edition." The Vanderbilt box will certainly attract a lot of attention once placed inside your estate and if you have a buddy who loves to make his own drinks, you now have a gift idea.

## Live Fun NEFFOS C5



Coming Soon

TP-LINK neffos

Neffos : [www.neffos.com](http://www.neffos.com) | [sales.in@neffos.com](mailto:sales.in@neffos.com) | [marketing.in@neffos.com](mailto:marketing.in@neffos.com)



## Astell&Kern AK Jr

Hey there, audiophiles. You must be hoarding a lot of expensive audio equipment back at your homes and here's another one for you. If you've been keeping up with product launches lately or should we say, being a true audiophile, you must have heard about the AK Jr. After being commemorated by awards, the portable music player has a limited edition selling on Amazon. The rare AK Jr Red is enclosed in an aluminium case with a golden textured



aluminium volume wheel. It supports almost all music file formats out there including DSD and it delivers its superior sound through a high-quality Wolfson DAC. The 3.1-inch touchscreen display lets you browse through your music library that can be stored in its 64 GB of internal storage. It can be further expanded to 128 GB with an additional 64 GB microSD card. The AK Jr Red weighs only 93 g and can connect to your headphone or speakers via Bluetooth. When it comes to audio playback, it supports 24-bit/192 KHz and due to its high 1.95 V RMS headphone output, you won't be needing a separate headphone amp. The AK Jr Red limited edition is priced at around ₹35,000.

## Advent

Weren't exactly sure about the reasons that makes one clumsy, who keeps dropping their phones quite frequently. Additionally, owning an iPhone does make you more alert on holding the device firmly since we all know the surface won't survive a fall. Now, if you're a rich person, a really rich person who can spend around ₹70,000 over just a bumper case, your clumsiness has invoked a saviour. The Advent is a Titanium bumper case for your iPhone 6s or 6s Plus, turning your phone to look as if it has been enclosed inside a futuristic exoskeleton. The material is no joke. Made with an Aerospace Grade 5 Titanium usually used in the aerospace and Formula One industry, it is two and half times stronger than stainless steel, half its weight. The shock absorption and protection is achieved with a black rubber housing covering the edges of the phone, placed within the Titanium bumper. The



Advent requires so much precision and machine-level craftsmanship that only 100 of these are being made. The entire apparatus is a two-piece design and doesn't require any screws or tools to assemble. Being clumsy is expensive, and with enough money to spare on protecting your phone, the Advent is the most ostentatious way to go.

## APP WATCH

### Pluss



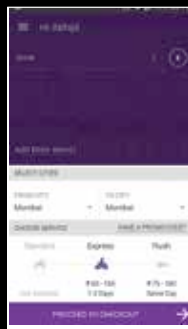
Having medicines delivered at your doorstep is incredibly convenient for elderly people. With a few taps, you can send prescribed medicines to your parents or grandparents from anywhere in the world. Pluss lets you upload prescriptions and order the desired medicines. Along with medicines, you can order pet care products, daily essentials, baby care etc and also you can search for places conducting lab tests such as Anaemia, Malaria Antigen,

Kidney Stone analysis etc. This service is yet to expand to other cities (currently available only in New Delhi) but it does look promising.

**App Store:** <http://dgit.in/PlussiOS>

**Play Store:** <http://dgit.in/PlussAnd>

### Parcelled



Delivering a package to someone is easy but you would still have to drop off the package at the delivery service. Parcelled is trying to away this one pain point among others, to get items picked up and delivered at desired locations. The app offers same-day delivery as well which is obviously within the city. The app isn't complicated at all, and you get to pick between three delivery time options of Standard, Express and Rush. The

delivery charges change according to the item you choose, obviously, and the rates are pre-defined. This module might be buggy, for example, we found the rate of delivering a book and mobile together to be the same cost as delivering just a single book.

**Play Store:** <http://dgit.in/ParcelledAnd>

### Grofers



Primarily meant to deliver groceries right at your doorstep, Grofers delivers you other products including cosmetics, cakes, baby food, frozen foods etc. Surprisingly, deliveries for all products and categories were closed down even at a busy time of around 8:30 pm across different locations around the city. Not quite a flexible when it comes to deliveries. But the catalog is vast and you'll be self-sufficient and might not even

need to step out of the house for groceries or any kind of food items.

**App Store:** <http://dgit.in/GrofersiOS>

**Play Store:** <http://dgit.in/GrofersAnd>



## TEMPTATION

# CRITIQUE

*In this section, we put stuff through the grinder and closely examine what comes out; everything except gadgets, because there's more to life than just that*

### TV SHOW

## Sherlock: The Abominable Bride

A Victorian whodunit

**T**he last season of Sherlock saw the famed detective locking horns with the Napoleon of Blackmail – Charles Augustus Magnussen. Aside from the lengthy aristocratic name the creators did go a long way into making the villain seem larger than life, into making him seem a worthy successor to Moriarty. Alas, Charles simply couldn't fill Moriarty's shoes and the season ended with Moriarty face plastered over every single public screen signalling his return ... after death.

Perplexed?

The Abominable Bride is set between two seasons and

provides a much needed dose of Benedict Cumberbatch and Martin Freeman's excellent portrayal of the famed duo. So why does it feel so lacking in substance? The fact that this episode is set in the Victorian era does mean that the CGI callouts that pop-out from the screen as Sherlock rushes through one of his many deductive moments seem out of place, and rightly so, those elements have been removed. This move hasn't gone down well with purists but the way the story metaphorically ties up loose ends with the supposed reappearance of Moriarty is the deal clincher.

**Rating:** ★★★★★☆

– Mithun Mohandas



### Star Wars: TFA Visual Dictionary

We hope that you've finally watched The Force Awakens (if not, shame on you for not unleashing the force) and it's now time to delve deeper into the details of the story, plot elements, characters and other finer aspects of the latest addition to the Star Wars movie franchise. This Visual Dictionary is a concise compilation of official characters, vehicles, weapons and accessories. You won't be disappointed, that's a guarantee.

TP-LINK | neffos

# Live Fun



## Neffos C5

- 2GB RAM + 16GB ROM
- 5.0 inches HD IPS Display
- Camera 8MP / 5MP
- Dual Sim
- 4G LTE



[www.neffos.com](http://www.neffos.com)



## TEMPTATION

### TTD

*Bored out of your wits? Can't think of any fun thing to do? Worry not, we'll take that burden off your shoulders in our Things To Do section every month. Read on!*

## Prepare for Valentine's Day

*"When someone leaves, it's because someone else is about to arrive – I'll find love again."*

– Paulo Coelho

Valentine's Day is nigh. If you're single, you've come to the right place to change that. If you're already in a relationship, you could stick by and it's totally upto you, we won't judge. Of course, meeting someone in person is still the best way out there. But there are a bunch of virtual dating avenues to make things easier, also giving you complete control. We've compiled a list of such apps that give you the opportunity to get to know people and then decide whether you want to take things forward \*wink wink\*.

### OkCupid

This app is meant for people who are really serious about meeting that special someone. It's not exactly necessary but you have the option to answer hundreds of questions that contribute to



a common behavioural trait such as Lifestyle, Ethics, Dating etc. This collectively forms a match percentage, so a higher percentage with another person means better the compatibility. An efficient usage

of the app can only be derived by investing time in filling out your profile and answering as many questions you can. Only then you can expect to come across the best matches and start up a conversation. OkCupid's free plan has a limited inbox storage so, choose wisely before flooding people with your 'Hi' or 'Wassup' messages. There are no restrictions on your search distance so you can connect to people all across the world.

**App Store:** <http://dgit.in/OkCupidiOS>

**Play Store:** <http://dgit.in/OkCupidAnd>

### Tinder

None of the dating app listings can be complete without Tinder. You don't have to break your head trying to fill out a long-form bio or toil with too many questions. Tinder works because Tinder is easy to use. Swiping left or right to people brings in a sense of



power within you but it gets equally shattered when your swipe antics don't result in matches. Prospective matches will be thrown at you from your 1st-degree connections on

Facebook and rarely present you with your Facebook friends. One of the premium features, Rewind lets you bring back the person you might have accidentally swiped left. You are restricted to swiping only around a limited search distance but with Passport, you'll be able to swipe at any operational area of Tinder. With the new Super Like feature, you can notify someone with your subliminal potential soulmate proposal before they swipe left (or right) to you. For free users it's restricted to only one per day whereas for plus users, it goes up to five per day.

**App Store:** <http://dgit.in/TinderiOS>

**Play Store:** <http://dgit.in/TinderAnd>

### TrulyMadly

Reminiscent of Tinder's concept of mutual matches, TrulyMadly can be considered to be a tailor-made dating app for India. There are many levels of verification one has to go through, addressing



the skepticism confirmed by women on the dating services. So, you won't be able to see their names and as you explore the app more, you'll realise the focus on privacy. You can also go the extra-mile by climbing the

verification ladder through offline photo-ID, making a statement about how serious you are about dating. The 'Trust Score' is an interesting metric and an extra effort by the company to ensure to keep the trolls away and serious people near.

**App Store:** <http://dgit.in/TrlyMdlyiOS>

**Play Store:** <http://dgit.in/TrlyMdlyAnd>

### Woo

Another app doing the rounds in the India dating app scene is Woo. It goes forward by compartmentalising several categories in profiles. A unique feature in Woo is you can search for people



specifically through their lifestyle preferences. To put this into perspective, if someone has entered the genre of Rock under music in their passion and interests, you can tap on the selection and look for people with

the same interest. This indeed makes it easier to search people with common interests rather than browsing through countless ones. The rest is similar to the regular concept of picking and ignoring profiles.

**App Store:** <http://dgit.in/1njkh3N>

**Play Store:** <http://dgit.in/WooAnd>

*Disclaimer: It's completely upon you if you try to misuse the services of these apps. We won't be responsible for the actions you commit using these apps. Also, don't be a creep.*



# LIVE FUN

## GET MORE DONE WITH SEAMLESS MULTITASKING

The Neffos C5 is powered by a quad-core 64-bit processor that is designed to provide you with an unparalleled mobile experience. Packed with 16 GB of ROM and 2 GB of RAM, the C5 allows you to seamlessly switch between multiple applications on the move without a hitch. The onboard chipset supports blazing-fast 4G LTE that keeps up with your pace of life.

## SEE THE WORLD LIKE NEVER BEFORE

The Neffos C5 is equipped with a 5.0-inch HD 1280 x 720-pixel IPS display that puts it at the pinnacle of cinematic mobile viewing. You can immerse yourself in a colorful new world that is brighter, sharper and more defined than ever before!

## TIME TO CAPTURE FUN

The Neffos C5 is equipped with a rear 8MP camera that lets you capture all the fun in perfect detail as its happening. With its front-facing 5MP camera and wide-angle lens, fit in even more of your friends for epic selfies. Snap beautiful, high-quality photos long after the sun goes down with the rear-facing dual LED flash. Life is all about having fun, and its about time you capture it!

## DUAL SIM DUAL STANDBY

Dual SIM Dual Standby allows you to enjoy mobile on your own terms. Enjoy the complete mobile freedom of keeping separate work and personal numbers, subscribing to different mobile plans at the same time, and the ability to connect to network around the world.

## PERSONALIZE YOUR MOBILE EXPERIENCE

Combined with highly customized Android 5.1, the Neffos C5 uses smart technology to simplify your life with a personalized interface, providing natural, colorful, effort-less operations.



**THE LARGE F2.0 APERTURE OF THE REAR CAMERA ALLOWS USERS TO TAKE STUNNING PHOTOS EVEN IN LOW LIGHT CONDITION.**

## Smart Screenshot

- **Long Screenshot**  
Capture multiple screenshots and save them together in one extended shot.
- **Magic Screenshot**  
Awaken your inner artist and have some fun with your shots by drawing a lasso or doodle.

## Super Camera

- **Intelligent mode**  
The device automatically adjusts contrast, color, and lighting for 8 different scenes including cloudy, sunny, indoors and more.
- **Artistic filters**  
Choose between 30 different filters and bring out your artistic side.

## Beautify Selfie

Instantly enhance your natural beauty and craft the perfect selfie with the Beautify Selfie mode. Gesture and smile capture mode makes it possible for you to make perfect portraits.

## System Management

Make sure your device keeps running smoothly with onboard system management applications such as the app manager, cleaner, data usage controller, battery saver and many more.

## ABOUT TP-LINK

TP-LINK is a global innovator and provider of consumer and SMB networking products.

The company has been contributed to the most convenient access to local area network and internet, meeting the users' network need in life, work and entertainment with high quality service with sales revenue reaching USD 2 billion in 2014.

## ABOUT NEFFOS

Neffos is a smartphone brand affiliated to TP-LINK. Focusing on "Smart and Simple", Neffos aims to build a real intelligent and simple lifestyle from every detail by constantly upgrading and developing products.

To get more information, please visit [www.neffos.com](http://www.neffos.com)



**Origins: Music**

In this new section we analyse the beginnings of online music streaming, how it started and flourished

FUJIFILM

**FujiFilm X series**

FujiFilm updates its X series with three new flagship models in X series line up.  
<http://digit.in/FlagshipXseries>



# Will Indian e-commerce websites ever accept payments in **BITCOINS?**

Since the RBI isn't spooked about the current state of Bitcoins in the country, are we going to see a wide-scale adoption of Bitcoin payments across e-commerce websites?

Abhijit Dey  
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**T**here's always a reluctance at the back of your mind when it comes to trying out something new, driven by the fear of the unknown. Let it be sky-diving, entering an abandoned house, or transacting through a new payment method. India is still at a nascent stage in adopting another online payment system, especially virtual currency, where some consumers are yet to try their hands on online payments.

For the ones who are privileged enough to conduct transactions through online e-commerce websites, the number of transactions done by online payment systems are rising. Simultaneously, the globally popular virtual currency called Bitcoin has managed to catch a lot of attention in the country among tech enthusiasts and the ones who are fed up with the sinister plight of foreign currency exchange rates. Bitcoin transactions in India have faced several setbacks through the years and now things are looking bright. But in its current state, are we going

to witness major e-commerce players such as Amazon, Flipkart, Snapdeal etc, adopt the use of Bitcoin on their websites? We try to delve into the challenges faced by the industry to find out whether this is going to hold true this year.

## What are Bitcoins?

If you felt riddled with the words "virtual currency" or "bitcoin", let's talk about what they are and how they work. Bitcoin is a decentralised digital currency or a type of peer-to-peer electronic cash that has a number of advantages over the





## Watch out for sharks!!

Google's project Expedition will take you through Great Barrier Reef using VR.  
<http://dgit.in/VRexpedition>



## Yahoo Mail fixed

Critical Yahoo bug that allowed hijackers to control account settings is fixed, feel safe?  
<http://dgit.in/FixedYahoo>

Geek life

current payment systems. One advantage lies in not having to rely on banks or financial institutions for payments since you can transact from person to person for a lesser amount of transaction fees (1% compared to 3.5% currently in foreign exchange). The best advantage of Bitcoin that has caught everyone's attention is the blockchain technology it incorporates to remove counterfeiting. Although you can buy Bitcoins using your real money, you can generate Bitcoins by a method called mining. Bitcoins are mined by solving complex mathematical problems. Several portals around the world support payment through Bitcoins and all these payments are stored on a public ledger system which can be accessed by anyone to trace their Bitcoin transactions. Imagine the power of being able to identify and trace your previous payments and how powerful it would stand against any kind of fishy money-laundering business.

## The current scenario of Bitcoin in India

As Bitcoin garnered popularity in other parts of the world, it saw interest among enthusiasts in India. The Reserve Bank of India (RBI) had issued a cautionary circular in late Dec 2013, showing concern over the use of "Virtual Currencies" or "Decentralised Digital Currency". The statement read, "The Reserve Bank of India has today cautioned the users, holders and traders of Virtual currencies (VCs), including Bitcoins, about the potential financial, operational, legal, customer protection and security related risks that they are exposing themselves to." Basically, it was a blanket statement over the use of virtual currencies, repeatedly mentioning Bitcoins, and they advised users and traders not to indulge in its usage. Their concern was justified since they were still exploring the concept of virtual currencies. After a few days since the release of this statement, the Enforcement Directorate of India raided the office of a Bitcoin trading website – buysellbit.co.in which was based in Ahmedabad. The raid was conducted on the premise of violating the Foreign Exchange Management Act (FEMA) rules of the country, not because of Bitcoins. The investigation revealed that

around 400 users were using the website and have recorded over 1000 transactions amounting to a few crores of rupees.

Later in 2014, we saw a Bitcoin real-time trading portal named BTCXIndia come into existence, working in full swing. But soon, in less than a year, BTCXIndia had to shut down operations by the end of May 2015 as their banking partners Kotak no longer wanted to serve Bitcoin businesses, according to their official statement. Coincidentally, during the same time, according to a report by CNBC (<http://dgit.in/KotakConcrn>), Uday Kotak expressed his concerns about the arrival of a disruptive technology in banking which could function without banks. Eventually, BTCXIndia shifted to another bank and are now back in operation. Due to the absence of any legal and regulatory measures from the RBI, BTCXIndia temporarily has set its own regulation policies on Anti-Money Laundering and validating customers.

The positive takeaway is that the RBI isn't completely rejecting the idea of virtual currencies. In an interview with Raghuram Rajan, Governor of the RBI, when asked about his views on Bitcoins, he confirmed that they are watching the evolution of these type of virtual currencies. He raised the issues faced by Bitcoin talking about security issues and the highly volatile nature of its value. He believes that eventually we are going to move towards a cashless society and reassured that they would consider using virtual currencies even if it meant losing money. Rajan's statements reflected on how open the RBI is to introduce new concepts of transaction. At the end of Dec 2015, RBI released a reassuring statement by endorsing blockchain technology and virtual currencies. They praised its potential of fighting counterfeiting, overcome the challenges faced by the

existing fiat currency system and also believe that it can bring major transformations in the current functioning state of financial markets, collateral identification and payments system. The main intention of RBI here is to promote the potential of technologies that will lead to reducing costs and increasing the efficiency.

Many Bitcoin companies have been cropping up lately which is again an indication to the rising popularity and future-sight for Bitcoin. Recently, a Bitcoin mobile wallet service called Zebpay received funding of \$1 million in VC funding. Zebpay is a rebranded buysellbit.co.in and this time they are getting serious about making it easier to buy and sell Bitcoins. A Bitcoin startup receiving funding is a positive sign that there is potential in the market this year.



The crypto-currency phenomenon is hitting India soon

Bitcoin mining as we all know isn't easy nor is it cheap. A lot has to be taken into account when it comes to opening up mining farms or just one mining machine. It takes a high degree of computing power now made easier with ASIC chips that are manufactured just for mining. Setting up only one mining machine would take a long time to solve the mathematical problems and generate Bitcoins. Hence, mining farms are set up with an array of machine mining Bitcoins. Such farms require a lot of electricity to run the machines and also cooling systems. Power isn't cheap in India and being the most important factor,





## VR open to all

In a move to bring more VR games to market, Crytek helps train college students.  
<http://dgit.in/VRDev>

## New lithography

Scientists coined bubble-pen lithography, for the technique of writing with nanoparticle bubble and laser.  
<http://dgit.in/BubblePen>

it won't be easy and economical to mine Bitcoins in India.

Scepticism for online payments still exists in the country. This is one of the prime reasons why cash on delivery (COD) was the most preferred mode of payment on e-commerce websites. In an attempt to lure in consumers to spend money using these online payment methods, e-commerce websites have introduced cashback rewards and huge discounts and they are working out pretty well. The market share of COD transactions is seeing a steady decline with the rise in penetration of credit card/

that won't allow its wide-scale adoption in India just yet. The biggest hurdle for Bitcoin is the lack of knowledge about how the entire concept of cryptocurrency works. So, it would be a long shot to assume that people would know the benefits they can enjoy with the introduction of digital currency immediately. Bitcoins became popular as a payment method when it made news with Silk Road, an online black market for drugs. Almost all the illegal transactions in dark web markets were carried out exclusively through Bitcoins which led to the bad rep associated to it.

for their products in India, including a University named Dharwad International School in Karnataka. When it comes to e-commerce websites accepting Bitcoin, it really is a chicken and egg situation and there are two ways out of this. The first would be to wait until the e-commerce websites prepare an infrastructure to support Bitcoins and eventually start accepting Bitcoins. They can go on to introduce schemes similar to cashbacks in order to attract more people to use Bitcoins. The second way would be to wait for the Bitcoin user base to grow and flourish. Once it matures well, e-commerce websites can then consider opening up payments in Bitcoins.

"E-commerce websites will see an ocean of success by accepting Bitcoins since this payments platform is instant. So, more liquidity is available to the merchants, it saves them time, credit card and bank fees, and finally it's safe and accurate", says Vikram Nikkam, a Bitcoin Entrepreneur and Analyst from Bangalore who's quite active in the Indian Bitcoin scene.

Even though RBI is optimistic about Bitcoins, it is still under supervision to determine how it turns out. Regulations are yet to be formed covering all the factors encompassing virtual currencies. Without any legal framework or regulation, it would be really difficult to get more people on board. Coinsecure is another real-time Bitcoin trading platform who are about to release their own mobile wallet app and exchange app. On being asked about the growth of Bitcoin this year in India, Mohit Kalra, CEO and Founder of Coinsecure said, "I see Bitcoin growing this year, as Coinsecure will be providing much more services for investors, traders and for merchants. At the end, it depends on how Government or Regulatory Bodies react to this, as per the recent article by the RBI, it's more of a green signal for Bitcoin companies to expand even further."

We can surely say that Bitcoin is destined to grow bigger. But we doubt the possibility of e-commerce websites accepting Bitcoins immediately. What do you think? Will you trade in Bitcoins any time soon? **1**



**Benefit of Bitcoin? As a crypto-currency, it's trackable. End of black money era?**

Internet banking payment options. As more consumers submit positive online payment testimonials, people have started considering payment through their credit/debit cards or Internet banking portals. This can be confirmed from a report by IMAI ([dgit.in/IAMAICOD2015](http://dgit.in/IAMAICOD2015)) last year stating only 45 percent of the people who shopped online paid through cash on delivery. Who knew this day would come so soon?

## Are we there yet?

Already having talked about the benefits of using Bitcoin, there are several barriers

The popularity of digital payment systems is clear from the reports by IMAI and PCI with a rise of 40% in the amount of digital payments conducted in a single year from 2013 to 2014. This drastic rise can be credited to transactions carried out on e-commerce websites as they have attracted consumers in large numbers.

It makes us believe that e-commerce players have the capability to encourage a new payment method through their website. A similar case can be presented for the introduction and wide-scale adoption of Bitcoin in the country. Several businesses have started accepting Bitcoins





## Live long

Researchers have uncovered a new hormone to elongate human lifespan. Find out more here.  
<http://digit.in/Life-Long>



## Humanising 3D print

Now 3D printing is more easier than ever with the introduction of this human interface.  
<http://digit.in/Human3D>

Origins

# The rise and roots of music streaming

Music streaming is huge today with dozens of services vying for your attention, but the very concept is much older than you'd have thought. In this new section dubbed "origins" we trace the roots and sometimes tumultuous stories behind today's everyday technologies.

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In 1897, a certain Thaddeus Cahill made a device called the Telharmonium – a device that took up a massive room with 200 tons of machinery and wires. It served as a centre for broadcasting music via telephone wires. Initially called the Dynamophone, it worked as an on-demand music broadcasting service where subscribers had to call and request for the Telharmonium line, following which they would be linked to the station. The Telharmonium would play electrically generated tunes over the line, which would be amplified at the user's end with a paper funnel.

This was the first true instance of music streaming, even before the invention of the very first amplifier in 1906. The Telharmonium generated live music at a 'music plant' at Broadway and 39th, and operated across the city of Manhattan. The music was eerie, and yet, attained a point of novelty and bewilderment among the crowd who noticed it. In December 1906, the New York Times wrote, "It is scientifically perfect music, capable of reproducing any sound produced by any musical instrument and many more that no musical instrument produces. Sounds like the extravagant exaggeration of a charlatan, doesn't it?"

Despite the first working model of the magnetic tape, the Telegraphone, being developed in 1898, there are no known recordings, live demos or any kind of content that accurately replicates how the Telharmonium may have sounded like. Arthur T. Cahill, brother of Telharmonium's inventor Thaddeus Cahill, was reportedly

looking for a place to house the mammoth prototype instrument in the 1950s. Unfortunately, he could not find a place, and the Telharmonium disappeared into obscurity. It left its legacy behind with the Hammond Organ, designed in the 1930s, which took its working principle from the Telharmonium.

Following the acceptance of Cahill's Telharmonium, the jukebox and the radio were the next steps in the history of music streaming. The very first jukebox can be traced back to even before the telharmonium, and was the first instance of a device transmitting recorded music. The juke-

company, later known as AMI, introduced a selective music-playing jukebox, which could hold multiple records and change tracks automatically. Known as phonographs till then, the term "jukebox" only came into being in the 1940s in the United States of America, with the rise of electrical automation, recording and amplification. Popular song listings came into being, in light of the most-frequently-played tracks on these jukeboxes. Wallboxes were yet another important feature of jukeboxes, giving remote control-like features to a listener. Towards the 1960s, these wallboxes started incorporating speakers with stereo sound technology.

Radio transmission developed parallelly, with broadcasts incorporating requests for recorded audio. Much like music streaming services of today, radio channels and broadcasters began striking deals with music labels to gain rights for playing their music. The introduction of radio services in the 1920s saw a drastic paradigm shift for music labels in terms of profitability of music. With more listeners being allured by the prospect of free music,

radio stations began figuring out ways to earn profits by introducing advertisements. In the meantime, vinyl record sales for music labels fell from a valuation of \$75 million in 1929 to as low as \$5 million in 1933, aided by the Great Depression. The music labels started filing lawsuits against radio stations, citing the reason that the free music was drawing listeners to the stations, and putting ads before playing music led to commercial gain from the copyrighted tracks. The copyright holders had a right over profitable public performances of tracks, and stations were enforced to pay



The legendary Telharmonium that streamed music into your telephone receiver

boxes used a coin-operated mechanism to produce music recorded in metal discs and cylinders. Take for instance the nickel-slot Edison Class M Electric phonograph invented by Louis Glass and William Arnold – inserting a coin and turning a lever would set a turntable of sorts in motion and place the stylus pin at the first groove of the disc or cylinder, following which music could be heard via listening tubes (headphones of the present day).

Over time, by the 1920s, jukeboxes started incorporating automation. In 1927, the Automated Musical Instrument





## Sperms move along

To reduce infertility treatment cost, Germans came up with this motorised bot to make sperms move faster.  
<http://dgit.in/SpiralBot>



## Phone backdoor

New Yorker's privacy may be infringed by the new proposed bill and pave way for other govts. to consider.  
<http://dgit.in/PhoneDoor>

compensation to the right-holders. Sounds mighty similar to how music streaming works today, doesn't it?

Jukeboxes and radio continued to be the prime instances of "streaming" music for the longest time, until the advent of the Internet. Towards the end of the millennium, Shawn Fanning started a peer-to-peer file sharing service that shot to massive popularity overnight. Napster, the forefather of music streaming services as we know it today, garnered nearly 80 million registered users in a span of two years. Users could listen to, and download digital files of songs, recording and other audio files which were otherwise difficult to obtain. Napster was an instant hit among the youth, with pre-release singles and entire albums attracting the music-loving youth by the millions.

However, Napster soon ran into copyright infringement lawsuits, which had the world divided on opinion. The service was forced to shut down within three years but, Napster's glory days showed the potential that online sharing and streaming of music had, and laid the foundation for a number of services to follow.

Alongside laying the foundation for music streaming services, Napster's lawsuit involvements also showed the world a possibility of presenting music tracks, albums and channels, for a fee. In 2001, Apple entered the portable music player front with the then-revolutionary iPod. Two years later, the iTunes Music Store was introduced, and with it, the realm of paying for on-demand music opened up. In January 2000, Savage Beast Technologies' Music Genome Project devised multiple characteristics of a track, to help classify and organise songs and tracks by various criteria, like genre, gender of vocalist and level of distortion on guitar, among others. Music Genome Project would go on to become Pandora Media in 2004, and laid the foundation for curating playlists based on listening preference.

By this time, the floodgates had opened for music streaming services to take over. Listen.com (now Rhapsody) premiered in December 2001, while most other services came along towards late-2000s. In the

meantime, Internet Radio services took precedence. November 1994 saw a Rolling Stones concert streamed live, which Mick Jagger opened as saying, "I want to say a special welcome to everyone that's, uh, climbed into the Internet tonight." NetRadio.com became the world's first Internet-only radio service, carving out a niche for itself with massive popularity, which many others followed. Last.fm, Virgin Radio and Broadcast.com were other pioneering Internet radios, along with iTunes Radio. In a bid to take the Internet Radio experience further, Last.fm offered a feature called 'scrobbling', system that tracks what you listen to across different applications like iTunes, Winamp, etc. This was one of the first methods of

personalisation based on listening preferences.

Switching back to music streaming services as we know them today, by the end of 2010, the music-frenzy world saw the likes of Deezer,

Slacker, Saavn, Spotify, Guvera and Rdio enter the music streaming field. Over time, and amid many controversies between the music streaming companies and artists over inadequate royalties, advertisement-supported free music streaming came

to being. Grooveshark was a major peg in music licensing controversies. The service used P2P file sharing model, paying users to upload tracks, which were further made available for download, for a fee. Its business model

was approved by a few smaller labels, but lawsuits filed against Grooveshark by Universal Music Group, EMI Music Publishing, etc held the service liable for damages worth upto \$736 million if found willfully infringing, following which they service shut down in May 2015.

In spite of these sporadic tussles, users at large could by now listen to tracks, albums and radio stations of their choice, and the songs were only interrupted by advertisements either on screen, or

between songs. This mode of operation allowed the music streaming companies to keep providing free music to worldwide listeners, while generating revenue out of advertisements to fulfill artists' royalties. Keeping the royalty and advertisement


model aside, this is very similar to what Napster had done, almost a decade back – provide free music that can also be downloaded for offline listening.

As of now, two crucial entrants have entered the music streaming industry. While Apple Music has brought with itself a large library of existing artist contracts that it had with iTunes, Tidal has focused primarily on quality. Tidal does not provide free streaming, and instead provides Hi-Fi lossless audio to paying customers. Music streaming services now are introducing multiple-user subscription offers to attract more users, and typically have millions of songs from thousands of artists across multiple genres.

Music streaming services have come a long way – from the very first Telharmonium to the digital music services of today. While we have ventured far away from its origins, the principles remain similar – latest songs from new and established artists alike, diverse playlists and fights over royalties and artist copyrights. In the present day, the focus has diverted to opti-

mising services according to network speeds. While services like Saavn stream low bitrate audio to cater to slower connection speeds, Tidal focuses on high quality audio which consume more data, but provide higher quality of

audio for audiophiles who may run out of storage on portable devices, with the large size of each file.

What began as a novelty in the late 1800s, is a regular product in use today. Music albums premiere over the Internet, concerts are ever so closer since the advent of Internet radio services. What next, then? With virtual reality edging closer towards everyday technology, maybe we'll be streaming concerts from our homes, and yet, be present at venues. 

Radio, only more intelligent



**Metallica never approved of Napster spreading their music for free**



**All that's good always came for a price**



## SECURE YOUR ANDROID, IOS AND WINDOWS DEVICE

Our digital devices aren't a mere access to digital gateways anymore, but also store a lot of our private data. We need to ensure that we take proper precautionary measures to safeguard our private data. There are a few critical methods to achieve better privacy on your Android, iOS and Windows devices. Let's take a look at each of them.

### Enable Two-Factor authentication (2FA)

Two-factor authentication or two-step verification is a security process which takes into account two different identification parameters. Only then a successful authentication can be established. The essential identification credentials can be a password or PIN, a physical device (phone or USB stick) and your physical characteristic (fingerprint or voice). Two out of these three credentials

are required for Two-factor authentication. It is quite difficult for attackers to extract the credentials since having access to a user's password won't be enough. This feature is what adds extra security over conventional authentication processes. But 2FA doesn't ensure absolute security and users have to carry a physical device with them. However practicing 2FA

will still be better than Single-Factor authentication. 2FA can be implemented across different platforms for mobile devices to ensure the integrity of the consumer's identity.

#### Android

Google provides 2FA authentication to its users across a variety of its products, Android being one of them. Users can

enable two-step verification by logging into their Google accounts and set it up through My Accounts > Sign-In & Security. Then click on 2-step verification to turn it on. Google will now ask for the medium through which you would like to get your verification codes on your device – voice call or text message. Enter the verification code you've received and then finally you'll be able to confirm activation. You can also use the Google Authenticator app for generating verification codes. Now whenever you login from an untrusted device, after you enter your email and password, a security code will be sent to your registered device. In case, you don't have your phone to receive the generated code, you can use the Backup Codes generated anytime.

#### iOS

To activate two-factor authentication on an iOS device you need to go to the Apple website. Then go to Apple ID Settings > Manage your Apple ID. Login



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{ Tips & Tricks has its own page numbers, and does not follow the rest of the magazine's page numbers. This is done to ensure that you can cut out and save T&T in a separate folder for later reference. }

Select Text message to receive codes on your phone

Login into your Apple ID to activate two-factor authentication

Remember the verification code displayed in the earlier step

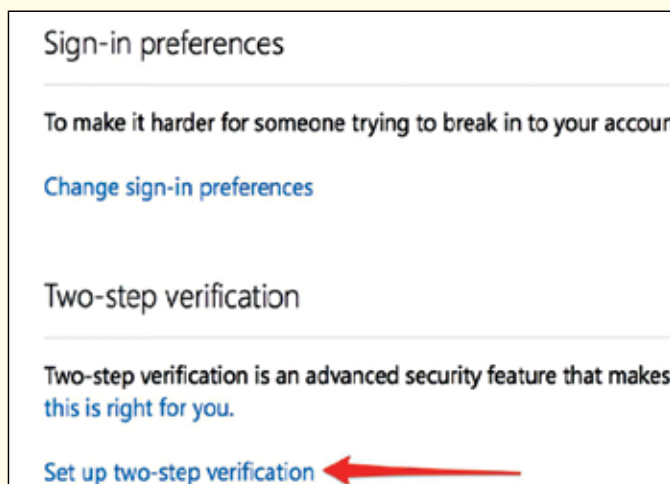
Click on Get Started to start with the 2-step verification





to your account for which you wish to activate two-factor authentication. Go to Privacy and Security, and click on Get Started link under 2-step verification. You will go through a set of security questions. In the next step you will be asked to enter your phone number, then a verification code will be sent to your phone. Before this you need to activate the Find my iPhone service for all your devices. After that a recovery key will be

other information to optimise and provide their services efficiently. Applications such as Facebook received a lot of slack from its users when it asked access to their contacts, phone number, calendar and locations. The sharing of sensitive data to apps may compromise the user's privacy. So, by disabling access to data inside apps, users can reduce the chances of losing data to unknown sources. Here are tips on how



Keep your phone near you during this process

given to you. After confirming, you will be able to enable two-factor authentication.

## Windows

Login into your Microsoft account and head over to the Security settings page. Under two-step verification, choose Set two-step verification to turn it on and select your device's platform. MS allows authentication from all platforms. Enter the security code sent to your phone. Your 2-step verification is now activated, you will be given a recovery key in case you aren't carrying your mobile device with you.

## Revoke app access permissions

Across various platforms, apps dig into your mobile phones to collect data and

to revoke the access to apps across platforms.

## Android

The latest Android update now lets you grant permission to apps individually. It also introduced runtime permissions allowing users to select whether they



Select the category you want to revoke access



Select categories that you want to revoke access

want to give an app access to certain permissions such as location, mic etc. This gives the users greater control to share sensitive data with the app. To select what information you want to allow the apps to access, go to Settings > Apps and tap on the three dots and then select Configure Apps > Apps Permission. You will see a list of all the types of access the app requires and you will be able to toggle them on or off as desired.

## iOS

Apple has always taken app permissions seriously. iOS also supports runtime permission to allow apps to access private data. However, you can select individual apps and their individual functions that can access the data and features. To do this go to Settings > Privacy, select the category that you want to modify permissions. Then you can grant or deny access to functions by simply toggling the app name and changing its behaviour individually.

## Windows

To allow or deny individual apps to access device information on Windows go to Start > Settings > Privacy, which will present you with a list of all the app permissions. Tapping into these categories will give you the option to globally allow or deny the permissions system-wide. Or you can scroll down to individually set permissions for the apps installed on your phone.

## Disable background data collection

Background data is collected across platforms to provide better experience to users by collecting useful data. However, this exploits the privacy of the user. This information may be compromised if not collected in secure manner. Collecting data without the knowledge of the user itself is unethical. But again, disabling permissions to apps doesn't guarantee that your data is not being collected by the OEMs.

## Android

There's a lot of bloatware in Android that may collect data from the device. Google may collect telemetry data of your phone like device status, MAC address etc. Ad companies require location information and personal data to track the user's needs. Ad blockers can be used to avoid browsers from collecting data from the user's inputs and sharing it with the ad company. Usually malicious attacks happen through such infected ads. So, installing an ad blocking app may help in preventing background data collection and compromise.

## iOS

Data may be collected from Spotlight Search in iOS. Apple keyboard also remembers words and handwriting of users and are stored at Apple's servers. The dictation feature of iOS lets the user convert speech to





Install Adblock Plus to block regular and malicious ads

words. Chances are that sensitive information may be tracked by the attackers. You can disable Dictation by going to Settings > General > Keyboard, and toggling off Dictation. Also, turn off the Diagnostic Data collection by going to Setting > Privacy > Diagnostic & Usage and select Don't Send. You can limit ad tracking by going to the Advertisement section below Diagnostic & Usage and then toggle Limit Ad Tracking to switch it on.

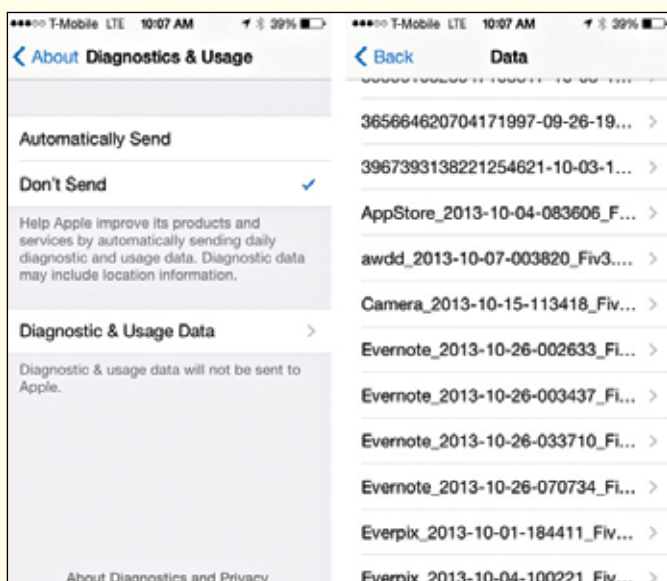
## Windows

There is a huge amount of data snooping by Microsoft from its users. Initial agreements while installing Windows on your system, asks permission to track your data to help Microsoft. Apart from Cortana "Getting to know you better" and collecting your data, Microsoft also gathers telemetry data from your device.



## Disable voice assistants

Voice assistants are great, they make cumbersome tasks easy with a simple voice command. Siri, Google Now and Cortana are the most popular voice assistants. From asking a basic question like "How is the weather today?" to counting the number of flights overhead, these tasks are done with ease by these products. Many of us rely on them on a daily basis. However, these assistants need to collect a large number of information to give you an efficient service. They access your contact list, calendar, photos and other tons of information. Voice samples are the main piece of information that is collected. This information is shared with the company which invades the privacy of the user.



Have a look on the data that is sent for diagnostic purposes

## Android

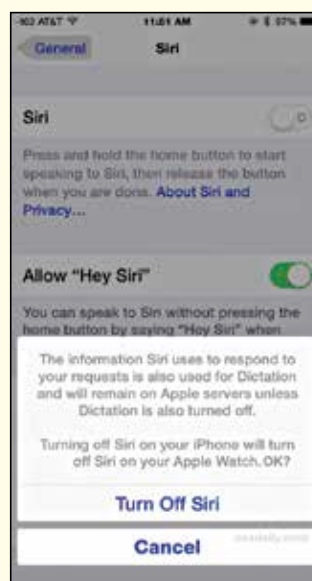
Google Now is Google's personal voice assistant. It can be switched off by opening the Google app and going to Settings > Voice > "Ok Google" detection and toggling of all the options. Let's face it, Google is our first option for any query on the Internet. So, it's difficult to discard the use of Google products but we can certainly stop using "Ok Google" in order to reduce information such as voice, contacts, calendar being shared with company.



Switching off Google Now

## iOS

Siri was quite a buzz when it was launched. To switch off Siri, open the Settings app in iOS and go to "General". Tap on "Siri" and near the top of the screen, toggle off the switch next to "Siri". Confirm that you



Toggle off Hey Siri too

wish to disable Siri completely by tapping on "Turn off Siri". If you want to be completely sure that your Voice samples are not stored within Apple's servers, turn off Dictation as well.

## Windows

Cortana basically searches your queries through bing.com that means even when Cortana is not switched on, your previous searches are still available with Microsoft. Cortana can be switched off by these steps: Go to Cortana's Notebook > Set-

tings > Turn off Cortana, then restart your phone. When enabled, Cortana requires your personal information, access to contact list, calendar, location and camera. You can completely wipe off Cortana's data from the phone and cloud. To wipe data tap on the head to Cortana's setting menu after turning off Cortana and restarting phone. Then, tap on delete phone's data. To clear Cortana's cloud data, Tap Manage Cloud Data to view the Settings page on the Bing.com dashboard. From here, you can clear your saved places, interests and other Cortana data.



## Enable remote locating and erase

Enabling such services on your device will ensure that when your device is stolen you can remotely locate and erase the data on it. Anyone who finds





your device can misuses your data. But the catch here is you need to be logged in to your respective accounts to connect to the device and erase the data on it and phone should have an active Wi-Fi connection or cellular data connection in order to get located. After erasing your data on the phone, you will not be able to locate your phone again. But you can be sure your personal stuff is no longer on the phone and move on.

## Android

Remotely locating your phone's location and erasing data on your Android device is simple. Head over to <http://dgit.in/AndDvceMngr> then log into your Google account to which your mobile device is logged into. A list of your devices will appear to which your account is linked. Select your device that is lost. If location services are active on the stolen phone you will be able to locate your device. To erase data on your device click on Enable Erase & Wipe, this will give you admin access to Ring, Lock and Erase commands to your phone remotely. If your device is offline when you give erase command, the process will be executed when the phone is back online.

## iOS

iOS lets you locate and wipe data on your device and also family members. You can erase, locate and play sounds on the phone. To get access to erase your iPhone you need to be logged into iCloud on your device. To do a remote wipe, head to the Find My iPhone section on iCloud.com. Click on All devices and select the device you want erase. In device info click erase. You'll be asked for your Apple ID and password. If you have iOS 7 or later, enter a phone number and a message. The number and message will be displayed on the screen after the device is erased.

## Windows

Windows phones can be located, locked, erased and called as well. To start this process head over to <http://dgit.in/MsftAcnt>, sign in with the account that you are logged in on your phone. Choose the device you want to locate if you have multiple devices, then click Find My Phone. To erase the phone click on Find My Phone and Erase. Finally, you can confirm your action by selecting I'm ready to erase my phone and then click erase.



## Try third-party softwares

There some excellent software available in market places of these platforms that provide security and privacy on top of the stock version of the platforms. You can secure your text files, photos and videos, block unwanted and unknown callers.

## Android

### 1. Crypt4All Lite

Crypt4All Lite is a free Android app that provides encryption methods to encrypt and decrypt files with the 256-bit AES algorithm (AES Crypt version 2). You can encrypt the files on phone before moving them to the cloud and you can store the files offline on your device. These encrypted files can be accessed through your key which a password you have set.

Link: <http://dgit.in/Crypt4AllLite>

### 2. Orbot: Proxy with Tor

This is a free Android app that uses Tor encryption to encrypt your Internet traffic and passes it through series of computers across the world.

Link: <http://dgit.in/OrbotAnd>

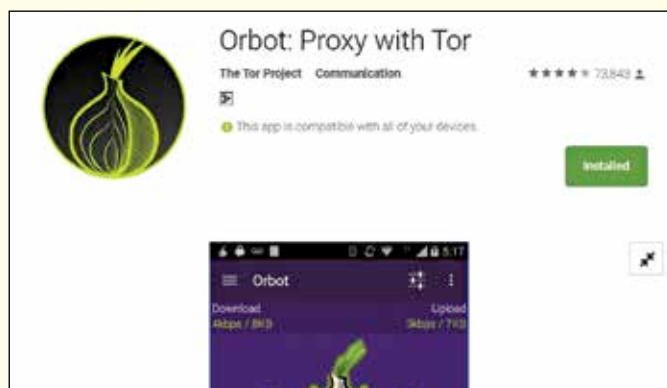
## iOS

### 1. Wickr

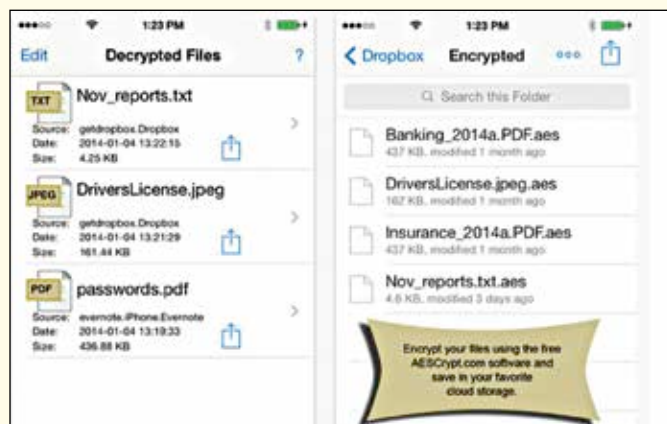
Wickr is available on the App store for free. It provides end-to-end encrypted text, video, voice and picture sharing. It deletes your data after periodic



Crypt4All uses Advanced Encryption Standards



Orbot provides anonymity to the users data by encryption



Upload encrypted files over the cloud

intervals and no copy of your conversation history is stored by Wickr.

Link: <http://dgit.in/iOSWickrApp>

### 2. AESCrypt

AESCrypt app for iOS provides the same functionality as Crypt4All Lite in Android devices. Files are encrypted using AES before backing them up into its cloud storage. In-app upgrades enables users to encrypt their files and save

them locally in the app. Later you can export these encrypted files to other devices.

Link: <http://dgit.in/AESCrypt>

## Windows

### 1. Keeper

A free app available on the Windows market place, it provides unlimited storage of passwords along with data encryption of your photos and videos and stores them in the app's vault.

Link: <http://dgit.in/KeeperWin>



## ALTERNATE KEYBOARDS

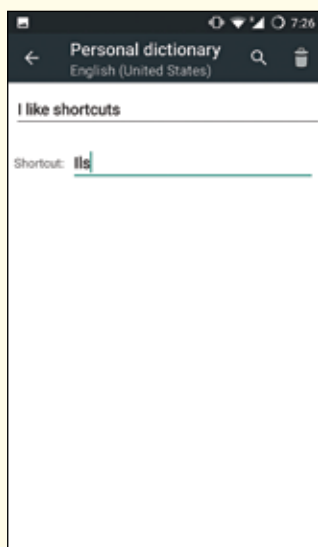
Stock keyboards that come pre-installed with your phone sometimes don't provide much productivity with their features. Popular third-party keyboards such as SwiftKey, Fleksy and Swype are good alternatives to your phone's stock keyboard. They provide some extra level of customisation, personal dictionary and other cool tricks that come handy in use. Here, you'll find a few tips on the three best alternatives to your stock keyboards and their tricks.

### Google Keyboard

Most of the phones come pre-installed with Google keyboard like Nexus devices. It's feature-rich and easy to use with Google's material design.

#### Add personal words to dictionaries and set word shortcuts to it

Google keyboard enables users to create their own dictionary list to add frequently used words and assign shortcuts to it. These features come to pretty good use when you have to enter your email address regularly on websites or during texting. By this feature you can assign a specific word to your email address



Assign Shortcuts to words

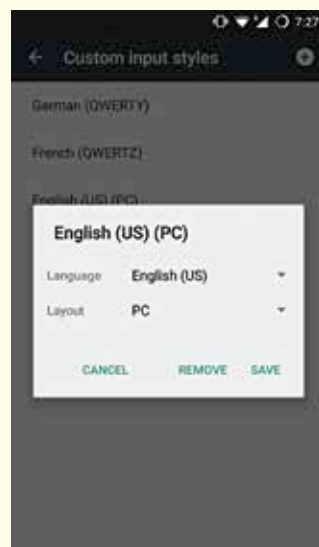
like "workemail" to your work email address and enter just the "workemail" shortcut, your email address will appear on keyboard. You can create many custom words and shortcuts to it. You can also assign shortcut words to Emojis, pretty neat huh? To enter personalised words, go to Google Keyboard Settings > Text Correction > Personal Dictionary, choose your language and then tap on '+' to add words and assign shortcuts to them.

#### Hold Shift key

You can capitalise the first letter of any desired word by highlighting the whole word and long pressing the shift key. This will capitalise the first letter of the word. This feature saves time and effort to move the cursor to the first letter and deleting it to replace with the capital version.

#### Enable Number row/PC layout

Stock Google Keyboard does not have a number row on the keyboard layout. You either have to long press the letter key shared with the number key to print the number or switch to the symbol layout. However, you can enable the number row by activating the PC layout on the



Enable PC Layout



Services to be integrated

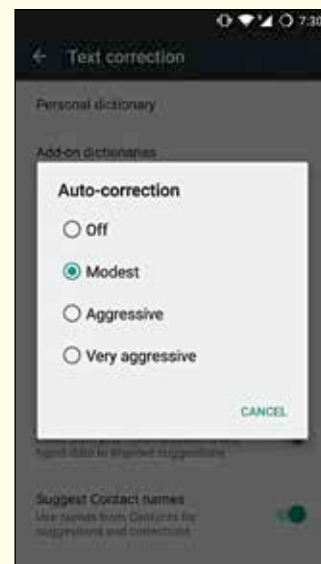
keyboard by going to the keyboard's settings then Appearance & layouts > Custom input styles. Tap on the add icon to the top left corner, Add style pop-up will come out. Then, select language English (US) and PC as the layout.

#### Import words from Facebook/Twitter/Whatsapp

User Dictionary Plus app allows users to import their words used on popular platforms such as Facebook, Twitter, Whatsapp, Gmail to Google keyboard. No need to save words in the dictionary manually any more. The app will import words from your Facebook, Gmail and Twitter accounts. However if you want Whatsapp words you need to upgrade to the Premium version of the app.

#### Enable autocorrect modes

By default, this mode is set to the Modest setting. To change these modes, go to Android keyboard settings > Text correction and select the desired mode. Setting the mode to Very Aggressive will correct your entered text aggressively estimating



Select Modest settings

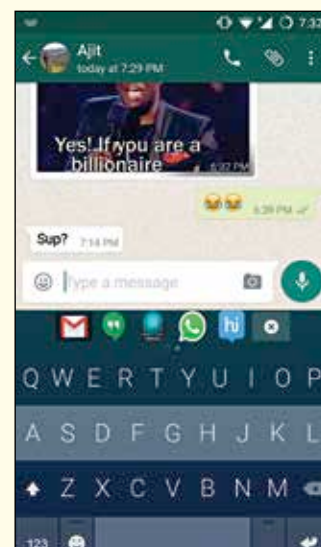
letters you have entered, but it won't recognise your shortcuts if not saved in the dictionary.

### Fleksy Keyboard

This is a feature-packed keyboard with tons of customisation options to revamp the look of your keyboard. There are useful extensions that allow users to increase productivity while typing.

#### Launch apps directly from the keyboard

You can launch different messaging apps directly from the keyboard. To enable this feature,



Launch App directly from icon





inside the Fleksy app, go to the Extensions column then Tap on Launcher extension. You can add apps by going to the desired app, swipe on the top row and tap on the '+' icon to add the app. Now, you can launch any app by just tapping on the app icon.

## Send GIFs

You can send GIFs to your friends using this keyboard. To send a GIF, go to the extension column, add Tap on GIF title to select and add the extension.

## Make your keyboard invisible

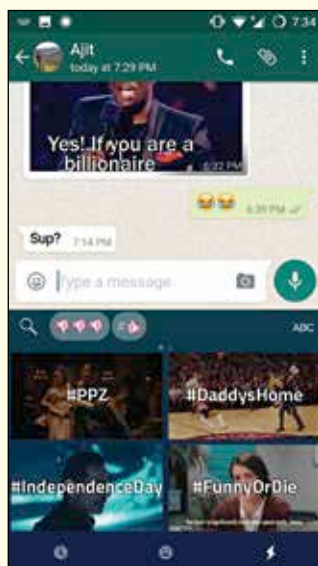
Be discreet and make use of Fleksy keyboard's feature to type on an invisible keyboard. To enable, go to the extension column and select the Invisible keyboard tile.

## Personalise your words

Import your personal words from Gmail, Twitter and SMS database and back them up to Fleksy's cloud storage. This will make typing words more productive across these platforms and no need to enter each word in your personalised dictionary. You can delete this data from their server if you wish. To acti-



Invisible Keyboard



Categories of GIFs

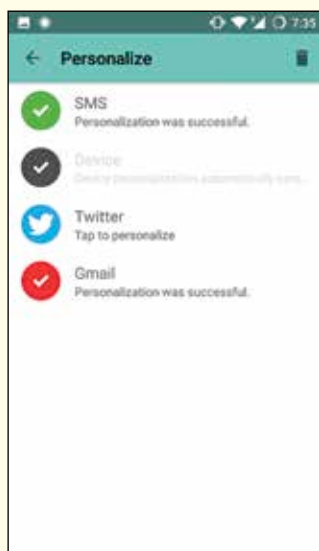
vate head to the "Personalize" tab in Fleksy.

## SwiftKey

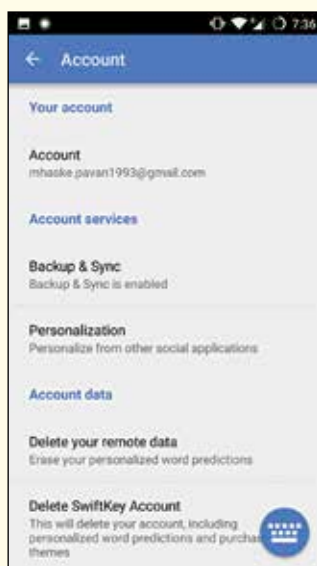
SwiftKey is the most popular third-party keyboard used by many people as an alternative to the stock keyboard. It provides tons of customisations with Themes inside the app.

## Back up your words and Swipe data

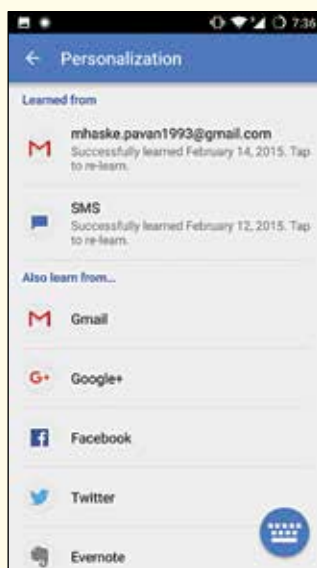
SwiftKey stores your word predictions and swipes, in their servers for backup. This feature helps users to retain their word predictions and



Importing words



Delete your data on the cloud

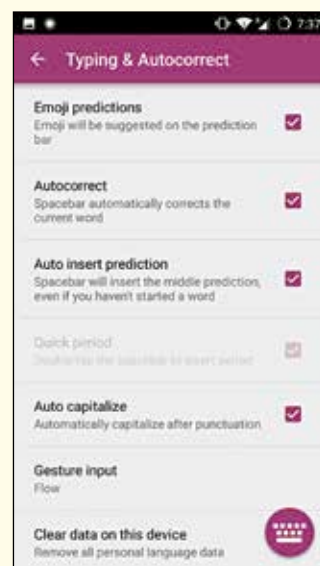


SwiftKey services

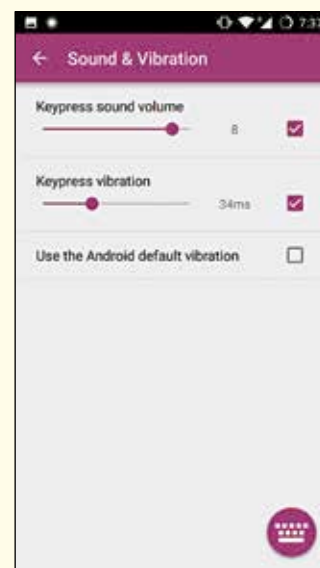
swipes, even when SwiftKey is uninstalled from the phone. All of the data that is synced and backed to SwiftKey's servers can be deleted. To delete the data from SwiftKey account head to Account then tap on Delete your remote data.

## Enable learn typing mode

SwiftKey learns prediction across different platforms such as Gmail, Facebook, Twitter and RSS feed. To activate this feature head to SwiftKey then Account, then head to Personalization. Here, select various product you want SwiftKey



Keep Auto prediction ON



Uncheck the last box

to gain access to words and typing data.

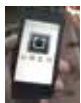
## Auto Insert Prediction

Enabling auto-insert prediction will insert the predicted word, when you start typing the word. To activate, head to Typing > Typing and Autocorrect, and check the square box for Auto insert prediction.

## Adjust Sound and Vibration

You can adjust sound and vibration duration for key presses. To adjust these factors head to Typing>Sound & Vibration.





## Uber's expansion in China

Uber is making it big in China as well after the fresh funding it received.

<http://dgit.in/UberChina>



## On-demand service ready

Electric cars have barely come on roads and Luxe has already partnered with them.

<http://dgit.in/TesLuxe>

Workshop



# Thou shalt not be dorked!

## How hackers exploit Google Power Search and how you can protect yourself

Kathakali Banerjee  
[readersletters@digit.in](mailto:readersletters@digit.in)

Google with all its glamour and popularity shines forth as the best search engine in the cyber world. However, it often acts imprecise. Suppose you are in the middle of a heavy lecture and you need to look up certain information hurriedly and Google shows you some terrible out-of-the-world search results, what would you do? That's exactly where the exciting trick called Power Search comes to your rescue. It is widely known that the Power Search technique bulk searches combinations of words to quickly check

a large selection of potential domain names. This hastens the search speed and also increases accuracy. Have you ever wondered about the prospect of such an advanced search technique being used for hacking? Hackers exploit power search to find critical information about you, be it your card information or seeing you in real time! Here's how it's done.

### Google Dorking

The practice of applying specialised search methods and advanced search engine parameters to locate confidential information is typically termed as Google Dorking. It is simply Power Search taken to a greater level.

The penetration testers in the cyber security arena often use this technology to locate any loophole within a particular website. Simultaneously, hackers can use Google Dorking tactics to reveal data that companies and individuals do not wish to make available through a web search.

Hackers also have a wide range of freely available online tools. They can use them to run automated scans that execute multiple Google Dorking queries, enabling them to perform hacking operations in a jiffy.

Five instances show you how dorking can pose a serious threat to your interactions online. We have necessary solutions as well, read on:

### 1. Hacking Security Cameras:

Internet Protocol based security cameras are used all over the world to monitor activities remotely. Shop owners use them to monitor activities of their employees and parents use cameras to keep an eye on their children when they are not around. Vulnerabilities in the firmware of these cameras enable hackers apart from the owners to see the live footage of a house and shop.

*inurl:"viewerframe?mode=motion"*

The above set of keywords is the master key to enter a number of unprotected live camera's domain. Hackers can actually gain full control of a security camera using this method. Live cameras once tapped can be used to commit massive crimes. The owner on the other side however understands nothing.

**Solution:** Remote online monitoring is a process that regulates a security camera online. An app or website is used to remotely log in to the security system and manage each camera. This feature is







## Limited edition Apple Watch

The Apple watch is adding the Hermès collection Apple watch for purchase on it's website priced from \$1,100 to \$1,500 <http://dgit.in/LEAppleWtch>

## Poor Pluto...

The ninth planet in the solar system could be a mysterious Planet X, not Pluto. <http://dgit.in/MysteriousPlanet>

generally kept “enabled” by most brands. So if you are not using it, turn it off. When in use, a strong password is a must. Lastly, consider purchasing security equipments through trusted sources.

**DIY Steps:** <http://www.lifehacker.com.au/2013/12/top-10-tips-for-setting-up-ip-security-cameras/>

## 2. Hacking Webcams:

Hackers can track down unprotected webcams and can watch the person on the opposite side secretly without giving the slightest hint. The following set of operators can be used to exploit webcams:

*intitle:"EvoCam" inurl:"webcam.html"*

Several cases have been reported till date speaking of webcam hacks and hence this is not something very difficult for efficient cybercriminals. Last year's Miss Teen USA Cassidy Wolf's webcam was hacked by hackers using Remote Administration Tool. Hackers used to spy on her using her web cam and even sold the access to cam in underground forums. Later, the hacker was tracked and jailed for 18-months. Unwanted webcam streaming kills your privacy completely.

**Solution:** It is advisable to keep your virus protection software's profile database always up to date. Update your webcam software on a regular basis. A good firewall might help more tech-savvy people to determine if their webcams are streaming data to an external source.

**DIY Steps:** <http://www.getcybersafe.gc.ca/cnt/blg/pst-20150128-en.aspx>

## 3. Hacking Personal Documents:

*filetype:php inurl:/list/admin/ intitle:"payment methods"*

Such a set of operators might give access to a repository with detailed information of the customer names, payment methods and order amounts.

*intitle:index.of/finances.xls*

With this set you might cross path with confidential bank information and customer details.

**Solution:** Try to avoid publishing sensitive information online. If you must publish the information, make sure that it is password protected and encrypted. Use .htaccess (a directory-level configuration file supported by several

web servers) to protect your directories from Google crawlers.

**DIY Steps:** <http://webrewrite.com/deny-access-of-files-and-folders-through-htaccess/>

## 4. Hacking Vulnerable Websites:

The insecure websites which are prone to SQL injection can be traced and pounced upon very easily by the hackers using dorks. The simple way is to add a “;” at the end of the URL. There are more complex methods as well. Databases of a website is where all the sensitive data is stored. Once it is compromised, a hacker can get access to stored credit card details, phone number and house address of users using that websites.

**Solution:** Use tools to run pre-populated dork queries to locate any freely available sensitive information on the concerned website. Do not index sensitive websites on Google. Use *robots.txt* to prevent search engines from indexing your website. Frequently test your website using a web vulnerability scanner. Make



sure the admin panel has custom names, [www.site.com/admin](http://www.site.com/admin) is easily guessable but [www.site.com/91029random/](http://www.site.com/91029random/) isn't.

**DIY Steps:** [https://www.owasp.org/index.php/SQL\\_Injection\\_Prevention\\_Cheat\\_Sheet](https://www.owasp.org/index.php/SQL_Injection_Prevention_Cheat_Sheet)

## 5. Hacking Wi-Fi Routers:

Advanced search filters can be used to hack vulnerable Wi-Fi networks. Hackers can grab controls of a network and wreck havoc if they find it unprotected. Dorking in a specialised way can actually reveal an array of vulnerable networks which are not properly secured. The dorks used to hack routers can be:

*inurl:"cgi-bin" "No password set!" "There is no password set on this router."*

*intitle:"router" inurl:"home.asp"*

Hackers often route their traffic through hacked routers. This helps them

in staying anonymous while hacking systems. When traced, the person whose router was used to route traffic is caught.

**Solution:** Firmware upgrade is the foremost precaution when it comes to routers. Use cryptic passwords to give hackers a hard time. WPA2 (Wi-Fi Protected Access 2) encryption is always recommended as it is difficult to hack. Lastly, consider enabling MAC filtering.

**DIY Steps:** <https://blog.czarsecurities.com/1357/protecting-your-wifi-from-hackers/>

## Shodan – a bane or a boon?

CNN Money while interviewing John Matherly, the creator, calls Shodan “the scariest search engine on the Internet”. While Google simply crawls the web to trace vulnerable websites, Shodan navigates the internet's back channels. It can hunt down several servers, webcams, printers, routers and all the other stuff that is connected to the Internet. It even allows searches for exploits and vulnerabilities.

The main issue is not that Shodan locates insecure devices, but that so many devices lack real security.

Penetration testers, security professionals and law enforcement agencies are the primary users of Shodan. Cybersecurity professionals use it to locate loopholes and

warn the concerned association beforehand.

Using VPN or IP filters in your firewall can protect your device from being discovered by Shodan. A firewall typically regulates the packets processed by the device and blocks all interactions from unknown hosts, by closing unused ports and protocols.

Now let's catch a quick glimpse at some case studies where attackers utilised the above methods and more to hack everyone.

## 1. Webcam Hack Harasses Teen Celebrity

In August 2013, the Miss Teen USA fame Cassidy Wolf received an email that featured nude photographs of her secretly taken via her own webcam by a hacker at her school. Through an anonymous email address, the cyber stalker blackmailed





### Your face on coffee?

The Ripple machine prints your photos, text and graphics on coffee foam.

<http://dgit.in/CoffeeFace>



### Chat and book tickets

Hyper, a new travel startup aims at providing you a personal assistant that can help you find the best tickets <http://dgit.in/HyperChat>

Workshop

Wolf for sexual favours. Cyber stalker turned out to be Jared Abrahams, who had installed Blackshades malware on her laptop and had been secretly watching her for one whole year!

## 2. Neighbour Takes Revenge through Brutal Wi-Fi Hack

This case dates back to 2009 in Minnesota, where Barry Ardolf, 46, repeatedly hacked his next-door neighbours' Wi-Fi network, and used it to frame the family for child pornography, sexual harassment and professional misconducts. He even sent threatening e-mails to politicians, including the Vice President Joe Biden. The entire attack was craftily conducted through the victim's own email id! Investigators examined the packet logs and nabbed the hacker.

## 3. Insecam Publicizes 73,000 Surveillance Cameras

In 2014, the cyber world was petrified when a website was reported to have

collected the streaming footage from over 73,000 IP cameras whose owners did not change their default passwords. Insecam – “the world's biggest directory of online surveillance security cameras” as they describe themselves, claimed to feature feeds from IP cameras all over the world. This website put all the streams in a place where anyone could find them effortlessly.

## 4. Mafia 'Demon' Boy's Website Hacks Give Corporate Biggies a Hard Time

Famously known as “Mafia Boy” in the media, this youngster launched a series of highly publicised denial-of-service attacks in February 2000 against large commercial websites like Amazon, Yahoo!, FIFA, Dell Inc., CNN and eBay. Jailed at the age of 15, his real name is Michael Demon Calce. Mafiaboy was the first to show how easily our personal data could be retrieved from some of the world's largest websites! The

attack was reported to have caused \$7.5 million in global economic damages.

## 5. Celebrities and Ordinary Netizens Together Face Personal Data Hack

In 2013, the ID details of US First Lady Michelle Obama and many other celebrities like Bill Gates, Beyonce Knowles, Jay-Z and Ashton Kutcher were exposed in a massive cyber breach. About four million Americans seem to have lost their confidential data at the hands of a mysterious data-selling site.

Let's learn from these incidents and realise that exciting features in the cyber world can any time backstab us by allowing the hackers to enter our private domain. Hackers are not magicians, they utilise the same technology we use, but in a negative way.

What can protect us? Well, awareness and precautions can!

The contributor Kathakali Banerjee works at Czar Securities, which is in the Cyber Security domain.

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# Build an old people friendly PC

**A step-by-step guide to transforming your existing PC to fit the needs of the elderly in your family.**

Arnab Mukherjee  
[readersletters@dgit.in](mailto:readersletters@dgit.in)

**T**he elders of your house, at their special age, have special needs for most activities. Computing is no different. A computer always helps in staying connected and makes most tasks easier, especially for the elderly. But have you ever tried explaining to your grandmother what Facebook is, or how to use Skype? The learning curve hasn't been easy and specialised computers for them have mostly been too pricey. For example, the Telikin 18-inch model goes for 699\$, that is almost ₹50,000. Even the Senior Tablet for the elderly costs 400\$. You can achieve the same results by putting little effort into modifying your old personal computer, which would just be lying around anyway, into a completely usable and appropriately calibrated device for the seniors in your family. After all, they deserve to be connected too.

## The external changes

You can modify the hardware in a number of ways to make the entire experience much more accessible for the elderly. There are some ways in which it is easier or more natural for them to interact with an electronic device, like using a remote, or directly touching where they want to click. Here are a few steps you can take without going overboard.

### Step 1: Convert your monitor into a touchscreen

A touchscreen is much more intuitive to use compared to a keyboard and mouse inter-

face. Just look at how quickly anyone learns to use a smartphone. To make your monitor touch-sensitive, you will have to acquire a Digitiser, which is what senses the touch. You can get a DIY Touchscreen kit for your screen size online. The basic process to do this is to place the Digitiser screen on top of the screen inside the casing. You will need to remove the casing to do this and you may also need to make certain size adjustments. Connect a USB-to-4pin or any other



The very useful EldyTV app, which makes it easier for users to watch EldyTV's Italian channel along with YouTube, TED videos, Hulu etc.

specific adapter you may need between the touchscreen and the PC, and then load the required drivers. You're all set.

### Step 2: Put in a Remote Control.

A remote control would greatly minimise the need to walk to the PC again and again just to change a song, or turn off the monitor. This can be done in a number of ways, both hardware and software-wise. A simple on-off switch can be installed by just replacing the connection between the power switch and the motherboard with a connector to an IR sensor. With some minor drilling and placement, the resulting arrangement would work with the power switch of most remotes. For a more complicated approach, you can use an application or code one yourself to detect all functions of a universal remote.

A much better and easier to use approach is using an App-Server based

approach in which you install a remote control app on a smartphone and install the server end tool for the same client on the PC. Unified Remote (<http://dgit.in/UniRem>) is one such app that supports more than 90 remotes for all kinds of applications with simple and easy to use buttons.

### Step 3: Simplify the Cable Mess

Even the most tech-savvy ones among us are often daunted by the prospect of dealing with PC cables. One of the easiest ways to simplify this for the elderly is to use labels for everything. First, you will have to disconnect all the cables carefully, making sure not to open anything when you don't know what it is connected to. Once that is done, group the cables according to type and tie them together using Velcro strips – easy to open and tie again. For each such group, add a colour coded label, like 'Power', 'Display', 'Storage' etc.

## Tweaking from within Windows

Windows offers a lot of in-built support features for the elderly which make the OS highly accessible. Most of them can be found in the Control Panel under the Accessibility Settings or Ease of Access centre under neatly grouped tabs/menus. Here are some we found useful.

**Display Properties:** Decrease the resolution of your display to make icons and menus larger. To retain sharpness and visibility, increase the dots per inch. Within the Settings tab in Display properties, click on Advanced > General > DPI setting > Large size (120DPI). Also use higher contrast. Go to Display Properties > Appearance. In the Windows and Buttons dropdown, select Windows Classic, then go for High Contrast in the Colour Scheme Menu. Also set the Font menu to Large. You can also individually tweak font details in the menu under the Advanced button,



## GTA V map in Minecraft?

Minecraft users to build the entire GTA V map in Minecraft, sounds fun?  
<http://dgit.in/GTAinMC>



## No more wired controllers

Leap Motion is researching to allow use of natural hand gestures in VR, enjoy hands-free VR!  
<http://dgit.in/NaturalVR>

DIY

and select Use Large icons in the menu under Effects button

**Windows Accessibility Tools and Shortcuts:** Open Start Menu > All Programs > Accessories > Accessibility/Ease of Access. The Magnifier tool allows you to see magnified areas of your screen in a separate pane. You can place the pane on any side of the screen and can also invert colours when needed. The Narrator tool narrates everything that is present on-screen. The On-Screen Keyboard tool provides a keyboard in your display. This is particularly useful if the touchscreen has been setup.

The Windows Speech Recognition tool allows you to configure the computer to recognise a voice. Once it is configured, this tool can be used to Open Applications and Folders, Dictate text and perform multiple actions via voice commands. One of the simplest features of this application is to show numbers for every action on screen for the command 'Show Numbers', where choosing a number behaves as a single click. This is particularly useful when the pronunciations for an action do not match what the computer is expecting.

**Keyboard Settings:** Go to Start > Control Panel > Accessibility Options and open the Keyboard tab. The options you have here are StickyKeys, ToggleKeys and FilterKeys.

Enabling StickyKeys makes Ctrl, Alt, Shift and Windows behave as pressed until the next keystroke even if the user has let go of it. Enabling ToggleKeys notifies the user of pressing ScrollLock, CapsLock or NumLock with a sound. Enabling FilterKeys makes the keyboard ignore rapid keystrokes or keystrokes in quick succession.

**Mouse settings:** Using the mouse can be made a lot easier by tweaking some settings under Control Panel > Mouse. For example, setting the Double-click speed to low allows for better detection of slow double clicks. Also, under Pointer tab, you can toggle the last checkbox to show the location of the mouse when you press Ctrl.

## Software to make it simpler

There are a number of proprietary software in the market that simplify the entire windows experience by adding a UI layer

and Hotkeys on top of the existing OS. For example, Envelope from Simplicity Computers can run off a USB stick and provide a highly simplified Envelope-like



The Eldy UI has a very easy-to-use and friendly approach.

interface, as its name suggests, with four sections divided into four simple actions at a time. For example, opening the Email tab gives you options to Read Email, Write Email, see your Address book. The fourth tab in any screen is reserved for Tutorials, which take the user through the actions for that screen. The basic USB stick with the software is priced at 69 Pounds, or roughly ₹6,500.

A free alternative to this is Eldy, which can be downloaded at <http://dgit.in/Eldy-Dwnld>. The software is even more acces-



The Accessibility centre provides a lot of easy to use grouped options

sible and comes with Skype integration support. A lot of thought has gone into the design of the interface, as is evident from the separate buttons for "@" and several standard actions like Cut-Copy-Paste. Although it does have its share of problems with the help section being in Italian in one version, it is completely elderly oriented right from the point of installation to the close button.

## Maintaining the PC – The essential tools for remote access

Your responsibility is not over once you have made the system easy to use. Any computer, elder friendly or not, requires maintenance. Especially the ones which will be used by elders might be more prone to accidental failures. For the times when you are not present there, you may still need to remotely access the machine. Out of the remote access software available, TeamViewer is the best as it offers both attended and unattended usage. That is, you can work on the machine even when it is being used by the person. Here's how you can go forward setting it up:

**Step 1:** Download and Install TeamViewer software on both the controlling and the controllable machine, from the TeamViewer website. You need administrator access to do this.

**Step 2:** Select 'Personal/Non-Commercial' use when prompted during installation for free usage

**Step 3:** After installing, run TeamViewer on both machines.

**Step 4:** Enter your User ID and password to log into the client, and then enter your partner's ID to establish a desktop sharing session.

**Step 5:** Select Remote Control and click on Connect to Partner.

**Step 6:** When prompted, enter the password provided by your partner from the partner machine. You should now be able to see and have full access of the partner computer.

## Conclusion

Setting up the proper hardware, software and applications as shown above can enable the elderly in your house to finally start using a computer without feeling anxious. Beyond all these tweaks that you do for them, they deserve the same patience and dedication that they showered upon you as a kid. And there's much in it for you too. Remember the first time they taught you something that you thought impossible otherwise? Wouldn't you like to see them feel the same happiness because you made it possible?





### Tweet videos directly

After the latest Twitter update on iOS, you can see live broadcast on your Twitter timeline via Periscope.  
<http://dgit.in/PerisOnTT>



### Google's Tap 10

Google is giving away three songs for free to use Android Pay in stores for 10 times  
<http://dgit.in/GTap10>

# Power surge frying computers, RAM and HDD conking off, and a meaty gaming rig

Our readers come across the most damned situations but we're always there to help

## Kentucky Fried PC

Hey guys, I need help building a Mini-PC. I had an old computer with a GTX 9600 graphics card, 1 TB of storage and 4 GB of DDR2 RAM and an Intel E7400 Dual-Core processor. There was a power surge and everything got fried. So now I need a better rig than my previous one under 15K. Graphics are a main concern. Please tell me what parts to use. I can downsize to 500 GB of storage too.

—Saif W. Baeg



Intel NUC D34010WYKH

**A** If everything did indeed get fried and you've confirmed that to be the case, then you need to look at solutions that are readily available rather than resorting to building a new rig from the ground up. We say this because the budget, you've mentioned is very constricting. Usually, in the case of a power surge, there are fail-safe mechanisms like fuses at strategic locations all over the motherboard which prevents components that are plugged directly into the power supply (i.e. CPU and RAM) from going up in smoke. So you need to check if you can salvage those parts and sell them off for a few grand. Even then it is unlikely that you'll be able to save money for a graphics card that's better than current Integrated Graphics Processors present on CPUs.

So unless you assess the actual damage, the best course of action for you is to get a Mini-PC like Gigabyte's GB-BXBT-N2807, ASRock's Beebox or an Intel NUC like the D34010WYKH. You'll then have to invest in a hard drive and RAM modules so expect to blow another 5K on these. Current gen IGP's are good but not enough to help you game at 30 FPS. The Intel NUC is the most powerful among all of our suggestions and also costs 4K more than the other two models mentioned here but you should be happy if you can play CS:GO at slightly less than medium settings.

## ISP issues and a PS3 that needs a job

Hi Digit Team, I've got two issues:

1. I am currently availing the services of PMPL broadband. Now the problem is that I pay them ₹1,000 a month, and get 100 to 150 kbps speed! The plan is ₹1,000 for unlimited usage and up to 2 Mbps speed. I understand that that they said "up to" but the speed never goes up from 150 Kbps. I got 1 Mbps on the 1st month, it has been decreasing ever since, and now it's stuck around an average of 100 to 150 kbps. Please give me an idea about why is it decreasing. I have tried talking to their customer care, it's pretty much useless, also I can't opt for another ISP as they have monopoly rights in my housing complex.



Not an external GPU

2. I have a Dell XPS 14 notebook. The onboard Nvidia GT 420M graphics card stopped functioning a few months ago. So I bought a PS3 last year. But as you know games are releasing rarely for PS3. So now I have a new worthless machine sitting on my desk. I had this insane idea, is there any possible way of connecting PS3's GPU to my PC and develop a software to cloak it as a normal Nvidia or AMD GPU?

—Sumojit Basu

**A** Hey Sumojit, it seems you are an unfortunate victim of your ISP's contention ratio. Basically, if they haven't defined the ratio then you have the right to know since it is mandated by TRAI that all ISPs should reveal the contention ratio. For residential customers it is 1:50 and for businesses it is 1:20. Basically, this tells you how many people are sharing the same connection. When there are too many people, you end up getting poor speeds. Also, each individual customer must get a bare minimum of 256 kbps for your ISP to call it a broadband connection. Since this is a colony contract, you can get as many affected customers in your colony to come together and talk to the ISP. Unfortunately, TRAI does not handle complaints by individuals so that's a downer. Also, nobody can force you to stick to an ISP, that violates your 'Right to Choose' as a consumer so speak up!

As for the PS3, the Cell Processor has a very unique architecture which requires a lot of coding to be done which is why developers were not so eager to port their games for the PS3. So you can install Linux and then run Windows apps through it or you can even install Windows XP, but with so many software layers over the hardware,





## \$10M for SaaS startups

Supporting the Startup India's campaign, Storm Ventures launches \$10M fund for SaaS startups in India  
<http://dgit.in/SaaSStartup>

Q&A

you lose out on the processing power due to the overheads. So there's no point in going ahead with the exercise.

### A meaty gaming rig

I am planning to build a gaming PC with a budget of 50K–55K. The budget does not include the price of the monitor, keyboard, mouse, speakers/headset, DVD burner, operating system and sound card (if applicable).

My aim is to be able to play any game released till date at 1080p 60 FPS at the highest settings as well as future proof the build in a way that will be able to handle any heavy duty games released in the future (~2 years) at atleast 720p (@ highest settings).

Another requirement in terms of the cabinet would be to have additional space for more than two HDD's should storage space become a pressing issue later on.

As the main focus is on graphics performance, I am willing to compromise on certain aspects of the rig like having a 500 GB 7200 rpm drive, an 8 GB DDR3 RAM and a decent not too flashy cabinet.

Also, as I stay in Bangalore, could you suggest a one stop reliable shop where I would get the parts you mention.

–Amit Shetty

**A** Here's a decent configuration for all the things that you wanted within 55K.

• CPU - Intel Core i5 4460	₹13,400
• Mobo - MSI H97 PC Mate	₹6,965
• RAM - G.Skill F3-12800CL9D-8GBXL	₹3,404
• HDD - WD 1 TB	₹3,450
• PSU - Corsair CX500	₹3,799
• GPU - MSI GTX 970	₹24,000
• Total	₹55,018

This configuration will ensure that you can play all current AAA titles in full HD at max settings. And even continue to do so for at least two more years. You might have noticed that it does not include an SSD which will make your system a lot snappier. So you can spend ₹3K more to get a 120GB boot drive for your OS which would be ideal since you're spending quite a lot anyways. Kingston's UV300 is economically priced and performs quite well for the price.

For the cabinet, you can check out Corsair SPEC series, the O3 looks quite good and satisfies the criterion that you've put

down, i.e. it has three 3.5-inch drive slots and plenty of fan mounts.

As for shop suggestions, we've heard Golcha IT, Ankit Computers and Aashirwad on SP Road are good, but we prefer buying online since the whole system of returning defective goods is a lot more easier. Also, as the competition in the e-commerce space intensifies, each portal is ramping up their customer service. When it comes to RMA, it's you who has to do all the legwork so unless any shop is known to do that on your behalf and charge a slight premium for the service (which quite a few shops do), it really isn't worth the pain.

### BCCODE 7A

For the last four days, I'm getting the Blue Screen of Death on my computer quite frequently which shows windows is shutting down to prevent damage (sorry I can't read what's written after that as it appears for only 2-3 seconds). I have updated all the drivers but it isn't working for me. After restarting I get a message:

Problem signature:

- Problem event name: Bluescreen
- OS Version: 6.1.7600.2.00.256.1
- Locale ID:1033
- Additional information:
- BCCODE: 7A
- BCP1: FFFFFF6FC400079C8
- BCP2: FFFFFFFFC000009C
- BCP3: 0000000023659860
- BCP4: FFFFFF88000F39A18

–Suyash Kant

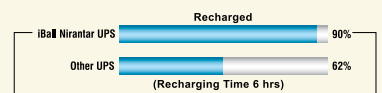
**A** Firstly, enter safe mode and undo any changes that you might have made. Code 7A refers to an issue where data couldn't be moved properly between the RAM and the Page File on the hard drive / SSD. So the easiest thing to do, is to reseal the RAM and check if the problem persists. If it does, then run Memtest86+ to see whether the RAM is faulty, Memtest86+ needs a bootable USB drive so you don't have to worry about Windows crashing during the test. If you don't discover anything during Memtest86+ then take your hard drive out and plug it into a stable machine as a secondary drive and run HD Tune error scan in normal mode(not quick scan). Accordingly, replace the RAM or the HDD if either of them show signs of failing.



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ILLUSTRATION:  
PETERSON PJ

# ANGEL OR DEMON?

The battle to keep the Internet free is raging on.  
For better or worse, this guy's at the centre of it all.  
We tell you what's at stake.



# THE N WORD

**Net Neutrality. A controversial term headlining our country's Internet debate. What's the big deal with Free Basics? Why is it uniting and dividing opinions? Why should you care?**

BY JAYESH SHINDE

**T**hroughout the past couple of decades since the Internet came to fore, we've always accepted it as something that just is. Whether you connect to Wi-Fi at a coffee shop or access the Internet on your smartphone's cellular 3G connection. During all these instances, you always accessed the unabridged Internet. Or did you?

We never thought about the possibility that the Internet could be off limits, that it would have a mind of its own when it served websites you requested. Not counting government censorship or the disconnection of your Internet broadband due to non-payment of your monthly "Internet bill" (or subscription cost), you never realized that the Internet that manifested itself on your PC's monitor screen could be behaving unnaturally. Whenever our Internet connection fluctuated for better or worse we either smiled or agonized, using the opportunity to either download a large file through BitTorrent (with plenty of seeds) or picking up the phone and yelling at your ISP's customer support operator. When a website loaded slowly or a YouTube video wouldn't play stutter-free, we always thought the problem was on the server side, that our Internet connection was largely not at fault and for the most part above suspicion – unless it was below 2 Mbps.

This fundamental perception of the Internet changed dramatically in 2015, as a national debate that had been raging only in the US till 2014 found a voice amongst public advocacy groups and

Internet stakeholders here in India. Net Neutrality reared its controversial head in a battle to control the sanctity of a free and fair Internet in India.

## WHAT IS NET NEUTRALITY?

While there is no standard definition for the term Net Neutrality, according to Tim Wu, Professor at Columbia Law School, credited with coining the term, it's "best defined as a network design principle. The idea is that a maximally useful public information network aspires to treat all content, sites, and platforms equally. This allows the network to carry every form of information and support every kind of application." In essence, Net Neutrality dictates that all data is to be treated equally. This means that your ISP will treat your request to access Facebook.com or Google Plus, Flipkart.com or Amazon.in, Google.com or Bing.com, Netflix.com or Erosnow.com, ThePirateBay.se, Pastebin.com, or Mega.nz without distinction and on equal priority. The ISP won't play favourites when it comes to serving one site better than the other.

According to this view of Net Neutrality, the ISP cannot and should not differentiate between or prioritize different types of data (Email, VOIP, Video, etc) travelling through the network, and that all data being served to the ISP's customer (the end user) should be done on a "best effort" basis with no exceptions. This should be done in a transparent and bias-free manner.

Just like the electricity being served into our homes doesn't differentiate between powering up an oven, toaster, refrigerator,

washing machine, air conditioner or television – it reaches all of them in a fair manner as long as there's unrestricted supply – so should the ISPs look at data packets being served to its customers over the Internet highways. Data should be served as best as possible with a fixed (monthly) cost for access to the network without questioning where the data is coming from or what type of data it is or preferentially charging for some types of data services over others. Period.

Another aspect of Net Neutrality, according to its proponents and advocates, is that every user who is connecting to the Internet must have equal access to all of the data services delivered through the network. If a farmer is connecting to the Internet over a low-speed EDGE connection through his smartphone's cellular network to get essential data like weather patterns, market rate for goods, etc., if he wants to stream a YouTube video or access any random website on the Web, technically he can access the Web and other Internet services as long as he hasn't hit his FUP data cap. It's possible. Why? Because data is served to him regardless of where it's coming from (Weather.com, Accu-weather.com or Youtube) without any discrimination and in a transparent manner. When that farmer connects to the Internet, it should be an unrestricted, unabridged connection. Not doing so is denying him the opportunity to connect to the same Internet that you and I browse.

This could fracture the very ethos of the Internet as it now exists. Instead of one overarching network which doesn't care

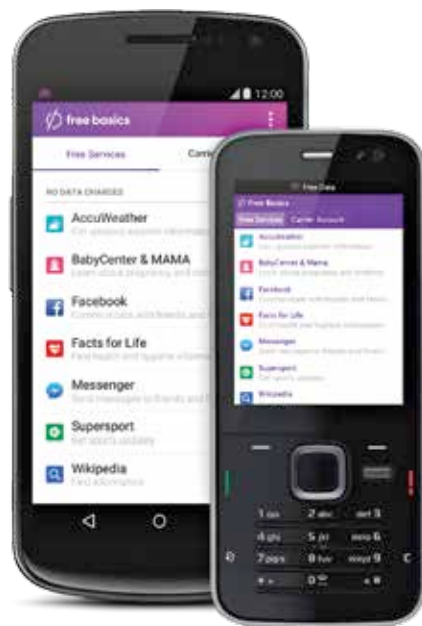


where you connect from, we will have several different Internet “islands” that provide gated access to services to serve vested interests, as Net Neutrality proponents have alleged. Case in point: Free Basics.

## WHAT IS FREE BASICS?

What was earlier Internet.org, Free Basics is Facebook’s effort to connect as many people who aren’t online (heck, who haven’t even heard of the Internet in the first place!) to the Internet. Facebook is tying up with telcos (Reliance Communications in India) around the world (Africa, South America, etc) to provide “basic” Internet services like Wikipedia, ESPN Cricinfo, Bing Search, BBC, Aaj Tak, etc. A noble cause, right? If Mark Zuckerberg wants to connect the next billion people online without charging them a dime, what’s so wrong? And why isn’t everyone applauding the effort?

Only because Free Basics is directly in conflict with Net Neutrality principles. As it exists now, Free Basics is discriminating against services and prioritising one service over others. For instance, under Free Basics, users will have access to Facebook and Facebook Messenger but not WhatsApp or Telegram, Bing but not Google, OLX but not Quikr, and so on. Facebook



Free Basics: Greater good?

is controlling which services to offer and not everyone is fully convinced it’s due to the largesse of its founder’s philanthropic heart. The move is also anti-competition and monopolistic in nature.

The greater damage caused by Free Basics, according to Net Neutrality proponents, is the people who access the service

may end up experiencing a curtailed version of the Internet and not realise its full potential. This will essentially carve up the Internet into several small islands, which is detrimental to the Internet as a whole.

TRAI is tasked with hearing both sides of the debate and finalize the Net Neutrality principles as it’s best applicable in the Indian context. So far, TRAI has received over a million emails asking it to uphold Net Neutrality principles in its entirety with no compromise over differential pricing of OTT (over-the-top services, which is how most Internet traffic is categorized) and certainly walled Internet gardens (like Free Basics). Is this the right approach to connect hundreds of millions of impoverished Indians online in the quickest possible manner?

What we need to decide and decide quickly is the following: Are these corporate efforts out to fracture the very ethos of a wide, uninterrupted, bottomless expanse of the Internet as it exists now? Can the net truly be neutral? What needs to be protected and what needs to be implemented? What are we fighting for here? The consequences of our actions may alter the very fabric of the Internet. It may never be the same from this point on. **[1]**

# DEMON

## How Facebook will kill the Internet

BY MITHUN MOHANDAS

**T**he easiest part of a Net Neutrality debate is where you list out the cons, the wrongs, the evils. Basically, everything negative about a non-neutral entity. Simply put, this story was the easiest to write. Not only because it is the right stance on the issue

but Facebook, through its actions over the past few months has done its fair share towards driving nails into its own coffin.

### WHAT FB IS OFFERING?

If you’ve read through the first article in this cover story then you now know what

Net Neutrality is and why it is important. And like everything under the sun, the definition of Net Neutrality has been interpreted differently by different parties to further their own cause. Facebook, despite creating a walled garden considers Free-Basics to adhere to their interpretation



of Net Neutrality and characterises the original definition as a 'puritan view'.

So what exactly is available on FreeBasics? Facebook maintains that any service that abides by their technical specifications can come onto the FreeBasics platform. At the time of writing this, there are currently 31 services across a narrow array of genres which include genuinely helpful ones like Wikipedia, wikiHow, AccuWeather, job search portals and few news portals.

Then there are questionable ones like a service that dishes out Astrological advice. Previously, there was even a real estate portal as part of the small bouquet of services. Why questionable? How is a service that is supposed to bring the internet to those who cannot afford data packs in the first place be able to afford housing? The real estate service is no longer part of FreeBasics. But we must wonder where exactly these services come into play towards enriching the lives of the poor when Mark Zuckerberg said, "And in the 21st century, everyone also deserves access to the tools and information that can help them to achieve all those other public services, and all their fundamental social and economic rights.

That's why everyone also deserves access to free basic internet services". Free ... basic ...

Quite a few partners have already quit FreeBasics in the midst of the massive backlash Internet.org received last year. ClearTrip, the online travel company, had this to say, "So while our original intent was noble, it is impossible to pretend there is no conflict of interest (both real and perceived) in our decision to be a participant in Internet.org". And just as this article was being written, Google who'd been a partner since the launch of Internet.org quit the platform. Google has declined to comment on the rationale behind this move but a large entity like Google quitting a platform only raises more questions.

## 'ENRICHING' THE LIVES OF THE POOR

Quite a few of the services on FreeBasics that benefit the poor are already in place through various government grassroots programmes so the issue then becomes that of convenience of getting the same information in the palm of your hand

rather than travelling, say a few kilometers, to the nearest government office. However, knowledge without proper education to interpret the same is a dangerous issue. Especially, when it comes to issues like child care. Which is why it is always advisable to avail the services of a trained personnel rather than resorting to self medication. And one of the reasons why government programmes succeed is that you need the right information and a guiding hand to coax the underprivileged. Let us throw in the age-old analogy of teaching a man to fish versus giving it to him. FreeBasics is akin to showing a starving man just the photo of a fish and telling him it's edible.

## FOOTING THE BILL

No device is ever free and we all know that. So the contention is that any TSP (Telecommunications Service Provider) that partners with Facebook – Reliance in this case – has to spend a significant amount towards setting up the infrastructure required to make space for an additional one billion Indian who don't have access to it. Our contention is that TSPs are going to spend that money either ways just to cater to our organic growth. Add to this, the fact that the services on FreeBasics are going to be heavily stripped down to reduce the data footprint. And that there will be a contention ratio put in place, which for consumers is set to a minimum of 1:50 by TRAI for broadband consumers. Since Free Basics is even more data efficient, it could end up being much lower. Essentially, TSPs will not have to spend an awful lot to build the infrastructure. One of the major expenditures we foresee is that infrastructure will have to be built in rural areas which aren't prime for high bandwidth consumption and subsequently, revenue from rural areas will be lower.

But Facebook in its anniversary report mentioned that 50 per cent of the customers using Free Basics subscribed to a paid plan after the very first month.

Essentially, Reliance will have to foot the bill for half the customers after one month. Whether the other half continues to be on the platform was not revealed. And this pattern was observed in the

many other countries that Free Basics currently exists excluding India. So is one half paying for the whole enough to sustain the infrastructure growth? If we go by profitability of telecom companies, the answer is probably yes. Since Facebook has claimed that half the users to indeed pay, it isn't exactly an experiment for Indian telcos. They're not going to burn their fingers since they do have a pretty good idea about the outcome.

## NO ADS? SO HOW WILL THEY MAKE MONEY?

Facebook has mentioned that there will be no advertisements on Free Basics but it hasn't mentioned whether this model will be followed forever or if it is 'subject to change'. But companies change service agreements whenever greed takes over or if it is actually necessitated to ensure the survival of the company.

What makes us skeptical of Facebook's intentions is because of what VP of Internet.org, Chris Daniels said in an AMA (Ask Me Anything) on Reddit –



"While we haven't found any business model where ad revenue could pay for people's access to the internet (look at Facebook's revenue, its far, far less than revenue operators receive from data charges), if there is a way that we can do so, then we want to be able to explore that in the future".

This comes from the company that posted a growth in advertising revenue by 53 per cent in the UK with 70 per cent of that share coming from mobile ad sales. If we are to take another example, the advertising giant, Google, earned over a billion dollars in ad revenue from the Indian market and they themselves said that Facebook's Free Basics program of getting TSPs to pay for the bandwidth, if implemented will be a game changer.

So why exactly is Facebook saying that mobile ad revenue cannot sustain the Free Basics system?



## CAN FACEBOOK BE TRUSTED?

It seems that Facebook is lying through their teeth. The advertising model on an open internet can easily pay for the entire Free Basics program and allow Facebook to foot the TSP's bill, especially when Google says so. Which begs the question of placing our trust on Facebook.

Will they be fair? History says, no.

Consider the case of WhatsApp, the extremely popular messaging client that was bought by Facebook. Around November last year, news about Telegram

But these can always be interpreted vaguely, like the very first criteria is that of 'efficiency'. Facebook dictates that participants should not use JavaScript, VoIP, video, file transfer, or photos larger than 200 KB. These criteria are well defined but then they mention that secure content is not allowed. So no transactions whatsoever? They also mention that services will need to use a Dual Certificate HTTPS implementation. Those with furrowed brows should read up on Lenovo's SuperFish and Dell's incident with self-attested

## Strike three! You're out!

Let's now take a look at all the countries where Free Basics is operational. Take Bogota for example. Karisma, a digital-rights group in Bogota came across a troubling discovery. Here's what Carolina Botero, Karisma's President had to say, "We have done some informal inquiries in the neighborhoods and found that people don't realize they are only on Facebook—not on the Internet". The phrase 'walled garden' suddenly comes to mind. Or if we are to phrase it in another manner. This is exactly what is meant by a two-tier internet. One is which Facebook and TSPs maintain a stranglehold over. And the other is the real open and expensive internet.

## WELCOME TO THE MATRIX, GANESH!

We can never say if we'll ever come across a pop-culture reference so apt for this situation. Those poor people whose first experience of the Internet is what Facebook decides to show him is akin to the machines hooking newborn babies straight into the matrix – an artificial world created to enslave human beings to be a source of energy, simply put, a battery. Free Basics is nothing but the same, an ecosystem that considers its subjects to be sources of revenue. It will mine their data and later sell the same to the highest bidder.

Also, if you are to believe that Facebook's altruistic intentions are nothing but the beginning of an elaborate bait and switch, then you wouldn't be wrong. Because this wouldn't be the first time it would have resorted to such a tactic. Previously, Facebook spent an equally ridiculous amount of money convincing brands to invest in establishing Facebook pages and building a community around it. And once brands had invested a lot of money to build such a presence on Facebook, it modified its algorithms to reduce the 'reach' of community pages under the pretext of ramping up its privacy policies. The organic 'reach' was effectively reduced to an average of six per cent. So if you happen to be a big brand who spent a lot in getting a lot of people to 'Like' your page, then your posts – after the policy change – will only be shown to about six per cent of your fans unless ... you paid up.



Average Revenue Per User (ARPU)

– a competing messaging client – started doing the rounds. And being the popular mode of communication that WhatsApp is, a lot of people started spreading the word about Telegram via WhatsApp.

And they discovered something very peculiar.

WhatsApp had made it so, that whenever a link to Telegram's website was shared on WhatsApp, not only was the link not clickable but you couldn't even copy the text so that you could paste it in a web browser. Users had to manually type in the URL after getting a message on WhatsApp. It is understandable that WhatsApp wouldn't want a rival client getting publicised via its own platform but what this incident tells us is that, Facebook, through WhatsApp wishes to retain a level of control over what their users see.

## Strike one!

The apps and services that will be allowed onto the Free Basics platform have to adhere to a strict set of guidelines designed to reduce their data footprint.

certificates. It essentially allows Facebook to access all data that it being transferred between its servers. If there is a strict vetting process to get onto the platform, why would Facebook want to access their user's data? Oh wait! That's how Facebook makes money.

## Strike two!

Speaking of the vetting process, Facebook did receive quite a bit of flak when they mentioned that they'll be doing the vetting process themselves. So when they decided to name a 'third-party', whom did they pick? IMAI and NASSCOM. IMAI stands for the Internet and Mobile Association of India. If the name didn't make it obvious, then let it be clear that the so called 'third-party' is a lobby for the very Telcos that Facebook plans to tie up with. As if that wasn't proof of ulterior motives, then Krithiga Reddy, Facebook's MD is the Vice-Chairman. It seems Facebook not only defines Net Neutrality incorrectly, but they seem to consider the term 'third-party' to be equivalent to family.



## Strike four! Get off the field already!

And it isn't just Facebook who can direct policy. Even the TSPs are major stakeholders and with each new Telco that signs up to be a part of Free Basics, there's one more greedy corporation with vested interests trying to make money off the subscriber base.

## FREE BASICS WILL KILL THE INTERNET

We understand Mark Zuckerberg's noble intentions of uplifting the poor by giving them access to the internet. But he is not giving the poor access to the internet. The very fact that they're introduced to a walled garden that Facebook masks as 'the internet' goes against the very principles of Net Neutrality. And blatantly lying about not being able to sustain the system on an ad-based revenue model should be more than enough to get alarm bells ringing. And masquerading Internet.org as Free Basics just to stave off some of the back lash is characteristic of shifty behaviour.

Facebook is not a non-profit organisation. It cannot get an expensive investment past the board of directors without elaborating upon the financial gains or ROI (Return on Investment). Mark Zuckerberg is right about users wanting to opt for the full internet and claims that Free Basics the the gateway to enriching people's lives. But why give the people a walled garden? Why take away choice? Why blatantly lie about a revenue model that sustains the biggest conglomerates on the planet? Blocking VoIP on Free Basics is understandable, after all, allowing it is the equivalent of suicide for Telcos but everything else makes no sense.

Mark Zuckerberg is right about Free Basics being a gateway. A gateway towards killing the internet that we know

and bringing in its place, a castrated version that strives to serve not the people but the entities that are stakeholders. Free Basics will pave the way for a multi-tiered internet with the poorest being able to afford the cheapest package, one which will reportedly have been 'subsidised' by big corporations in lieu of their services being given priority. This ramifications of such preferential treatment has been covered by multiple articles in depth over the years. No new services will ever be able to gain a foothold since their pockets wouldn't be deep enough to gain preferential treatment and they'll all die slowly or get consumed by big corporations.

Slowly, the entire internet will manifest as a monopoly or a farcical duopoly with one tier controlled by corporations and the other controlled by the government. It slowly makes the rich richer and the poor poorer, maintaining status-quo for a long time.

So you must be pining to know if there are models that provide the internet in its complete form and can sustain itself. There are.

## THE SOLUTIONS

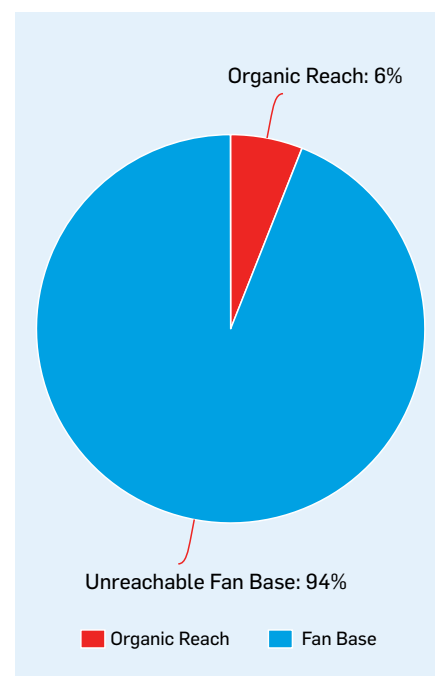
Project loon is an innovative way towards bringing internet to rural environments. It involves sending up balloons 20 KM up into the stratosphere where wind speeds are low and turbulence is low. A network of such balloons spread over rural areas then use directional antennae to bring internet to the masses using LTE bands..

Even Facebook has a similar program with balloons swapped out for drones. That's right, drones the size of a Boeing 737 aircraft. Everything else is pretty similar to Project loon.

Back home, Aircel – a TSP with a huge user base in South India – introduced a scheme where new subscribers get 90

days of Internet access at speeds of 64 kbps with no data cap. This new connection costs Rs.144 which works out to Rs.48 per month. Quite affordable and while it is an introductory offer, it can easily be subsidized to be made sustainable for the TSP.

Our neighbours in Bangladesh have the privilege of trying out another such service. Grameenphone, part of the Telenor group, has an app on the play store which gives offers a similar set of services like Facebook, except for one major difference. The user earns tokens which can be used to purchase data packs, so purely by



opening a few pages and participating in offers the users can earn data which can be used to access the entire internet. And this service has sustained itself for a little over a year.

Another example is that of Jana. Jana released an app by the name of mCent in India with offers that reward users with data packs. In less than a year, mCent gained more than 30 million users and it managed to grow tremendously over this period. It's annual revenue went from a few hundred thousand dollars to 50 million in under a year.

A 2013 study by Nielsen found that 50 per cent of the users are willing to pay to get access to better services from socially responsible companies. So it doesn't matter whether you give users a walled garden or an open internet. That 50



Walled garden vs Open Internet




percent will pay. So why put up the walled garden in the first place? Why spend money to ensure a walled garden when it has no effect on the outcome? It's all about control. And influencing your controlled user base to make more money. It's this very fact of hiding these intentions behind the guise of altruism that makes Facebook what it is, a for-profit corporate entity which eyes each new user as a source of revenue and nothing else.

### CONCLUSION

Around the world, the concept of Net Neutrality is far from being reality as you'll soon find out. A few decades back, the concept of independence was the same. Someone has to fight the good fight, even if it ends up being a thankless job. The world has India to thank for the concept of Satyagraha, maybe it's time we added Net Neutrality to that list even if decades later people might take Net Neutrality for

granted the same way we take our independence for granted.

We don't doubt Mark Zuckerberg's genuine intentions of uplifting the poor but the way Facebook is going about the same is plain wrong. In a parallel universe, it might very well be that Facebook is trying to do the right thing and it is actually the Telcos that are being evil. We can never know for sure. After all, the road to hell is paved with good intentions. 



## Facebook is NOT going to kill the internet

BY SIDDHARTH PARWATAY

It's easy to pander to popular opinion and cast a few stones in the right direction, in order to bag a few kudos along the way. The road less travelled – or in this case, taking an unpopular stance – is also more difficult. However, it's what we do here at Digit: analyse an issue by looking at it from all possible angles, even if the end result of the analysis goes against the popular opinion. At the very least, we are open to the existence of an alternate viewpoint. After all, even hardened criminals deserve representation and even if it's an unsavoury job someone's got to do it. Due process is logical, in line with the scientific bent of mind that we keep preaching. Plus, it's only fair.

A lot (and I mean an awful lot) has been written about why Free Basics is the harbinger of the internet apocalypse. Heck the previous few pages in this very magazine say exactly that! Now you have a few

more points to add to your next anti-Zuckerberg rant, which ironically enough, would take place on – surprise surprise – Facebook!

The whole argument for why Free Basics is not so bad hinges on whether some internet is better than no internet. On the surface at least you have to admit the notion isn't totally unfounded, especially when you know that not even 30 percent of the population in our country is connected. No one (and not even us, mind you) is saying that Free Basics is going to radically transform the lives of the underprivileged sections. But there has to be at least some benefit to be derived from gaining access to things like pregnancy and childcare information, job info, weather updates, free classifieds and Wikipedia in local languages – stuff that is universally regarded as beneficial.

There is an often quoted 2010 World Bank and IFC report which says for

every 10 percentage-point increase in high-speed Internet connections there is an increase in economic growth of 1.3 percentage points (<http://dgit.in/frbsc1>). “But that's high speed and unrestricted internet,” you scream! Yes, but you'll be surprised to know that even adding scaled down internet connections can increase time spent online by as much as 150 per cent. This was documented by Philippines telecom operator Smart Communications back in 2012 (<http://dgit.in/frbsc22>). If you follow that shortlink you'll also find that Google's own zero rated service Free Zone launched in the Philippines in collaboration with local carrier Globe Telecom, was aimed at enticing users to sign up for Internet services – an outcome that isn't horrible when applied to our Indian scenario. At the very least, such statistics prove the usefulness of basic internet access.



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# TP-LINK Presents

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Wireless Dual Band Gigabit Router

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- MU-MIMO for Nonstop Entertainment on All Your Devices
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- Powerful Processing
- Its LEDs can be switched off to prevent distraction.
- Easy Network Management — TP-LINK Tether



**AC 1750**

Wireless Dual Band Gigabit Router

**Archer C7**



**AC 750**

Wireless Dual Band Router

**Archer C20**

**Wireless**

**ADSL**



**AC 1750**

Wireless Dual Band Gigabit ADSL2+ Modem Router

**Archer D7**



**AC 750**

Wireless Dual Band ADSL2+ Modem Router

**Archer D20**

**AC 1900**

Wireless Dual Band Gigabit ADSL2+ Modem Router

**Archer D9**

- More Bandwidth, Less Interference
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- Beamforming technology delivers a more targeted and highly efficient wireless connection
- Easy Network Management — TP-LINK Tether





Some technology access is always going to be more beneficial than none, even if it's a limited experience. Consider the experiment run by the One Laptop Per Child (OLPC) organisation in remote Ethiopian villages. They simply dropped tablets containing e-books, movies, cartoons, paintings, and other content (but no internet access) without any prior training other than how to charge the devices. Within a few months the kids in those villages not only figured out how to consume the content, but even went so far as to customise their Android look and feel (<http://dgit.in/frb3c33>). Today, they're ready to start consuming more content, and dare we say, hungry for more. I'll come back to this point towards the end of this article, but for now, let's look at the arguments against Free Basics.

### IT'S AGAINST NET NEUTRALITY!

Ah the open and free level playing field that is the internet. A sublime utopia where all data is treated equally, where young upstarts armed with an idea can (in theory) overthrow established corporations, and yes, that young upstart could be you... But guess what? The internet isn't neutral and it's never been. Since I'm working with a limited amount of space to present my case, I'll let Robert's column (page 06) explain how. If you haven't read it already I'd urge you to do so and then come back.

Even if you are a purist, consider the reality that the now abhorred term Zero Rating doesn't mean that certain data streams are being given preferential treatment, it only means that certain data won't be charged. Savetheinternet.in, the advocacy group that's been doing a good job of keeping a lookout to protect the rights of indian netizens, often cites Gigato as a viable solution to address this problem of getting the underprivileged masses on to the internet. The popular belief is that unlike Free Basics, Gigato doesn't violate net neutrality norms. Instead of not charging for certain types of data, Gigato actually refunds data that is consumed while connecting to their partner clients. Even if it doesn't technically violate the (loosely defined) principles of net neutrality, at the very least the practice is anti-competitive because only those clients with already deep pockets can afford to pay for their user's data.

This breaks down the utopian "level-playing field" dream that we're supposedly trying to protect.

What's funny is that when a violation of net neutrality norms serves our interests, we don't seem to care as much. Your ISP has a tie up with YouTube for local caching? This means that you don't have to wait for ages for videos to buffer, and you love the experience. Unless you're a YouTube competitor that is. Where are all the internet petitions against that? In some cases, ISPs don't even count YouTube data against your FUP limit! If torrents were Zero Rated, would you honestly be up in arms to protest it?

### CARVING UP THE INTERNET

We've all seen the forwards. ₹50 for a WhatsApp pack, another ₹10 for the Facebook pack... Yes, this is a very valid risk.



However, like most other sectors in India, this one is regulated as well. We have a very competent regulatory authority that has shown some remarkable aptitude recently, when it penalised Facebook for its methods by calling them a "crude and orchestrated opinion poll". Why such little faith in the TRAI? I'm quite happy with the way the TRAI is being inclusive (at least ostensibly) and following what looks like a well thought out process.

Think about it, maybe a well policed and government regulated Free Basics could actually end up as something beneficial to all. Or example, let's assume the TRAI puts in a regulation directing all telcos to always make available to everyone an "all access" internet pack. Such a pack shall never be priced higher

than the price of 5 individual packs, and will never have differential data speeds. Plus, to preempt another criticism, let's say that these options are only available to users who have been online with an all access pack for, say, three months. After that, let telcos have a field day coming up with whatever WhatsApp, and Viber and Flipkart packs they want to. If some people genuinely just want connectivity to social networking platforms when on the go, let them pay less and get that selective service.

Also, let's face it, this whole debate isn't really about whether Ganesh the farmer is going to benefit from Free Basics' weather updates... it's really about how we feel that a dangerous precedent will be set. You are afraid that if a restricted form of the internet is allowed to operate, who knows, one day there might be restrictions imposed on your porn and torrents. Let's say an ISP says, "you know what, we will offer you a pack that doesn't include porn or torrents for half the price." Your dad will say wonderful and subscribe to it. How do you explain that you need both those? Or maybe it's not ISP driven. Maybe it's an overzealous government imposing some sanskari beliefs. If Free Basics is accepted, maybe that will get accepted too. Maybe people won't come down to the streets in protest.

The point is firstly let's drop the pretence that we care about the "quality" or "nature" of the internet that farmer Ganesh is getting. We're more bothered about the larger fallout that could (with great leaps of an overactive imagination) someday affect us. Is that reason enough to deny Ganesh some form of access right now? I say let's fight those imaginary demons when they manifest themselves. Not now.

### EVERYONE DESERVES THE FULL, UNRESTRICTED INTERNET

We couldn't agree more. If you read Zucky's impassioned opinion pieces you'd probably see that beyond all the spiel, our seemingly do gooding billionaire is genuinely confused about the backlash he's facing. In some foreign media coverage about this topic, I came across this very interesting line: The very people Free Basics was supposed to please seem to be its biggest detractors. The trouble is that the people who Free Basics was supposed



to please are not the ones who are vocally against it. In fact this huge majority – the supposed recipient of this aid – is without a voice. Ironically the one thing that will give them this digital voice is being denied to them. Instead the already connected vocal minority – privileged internet-connected people like you and I – are the ones screaming ourselves hoarse on social media. Since it was a foreign news source you can forgive them for their lack of understanding of the nuances of this issue but at least people living here should be open minded enough. There are certain detractors of Free Basics who even go so far as to criticize the platform for not having JavaScript. That's just absurd.

Think of a restaurant that starts offering free dal roti to anyone who wants it. A bunch of underprivileged people start having this free meal. It's not stale or unpalatable, but it's just very basic dal and roti. How correct is it for you to ask, "Why aren't you feeding those poor people butter chicken and butter naan?" Actually, it's more like you demanding that they be fed a buffet dinner fit for kings, and by using someone else's money at that. And if they can't be fed according to your standards, well, then they should go hungry. How incredibly caring you are! Oversimplification you say? Well, sometimes it helps to simplify in order to understand. The bottom line is, we have no idea what the masses want, and we certainly don't know what they need.

Want a simple test of who you're really worried about? Think about the government asking ISPs to provide free (full) internet to everyone, and allowing them to recover those costs from existing users. Since millions seem to care so much for those people, and giving them the "real" internet, surely just voluntary donations of money, or halving your bandwidth would allow at least another 300 million Indians to come online. Are you willing to sacrifice something? If your answer is no, then you really should stop lying about caring for the welfare of Ganesh the farmer.

Another popular argument is that that Facebook will forever taint the

understanding of the next billion who come online. For them, Facebook will be synonymous with the internet. In fact, it's stated that a large section of the connected population already thinks this. I really need to Google this fact to find out if it's true. Oh sorry, I meant I need to search and find out if it's true. See what I did there? The starting point for many people already is Google. You have probably heard some friends say, "I read it on Google". No they didn't!

Here's another analogy: if I am a philanthropist shirt maker, and I give away my brand of shirts to an impoverished population of tribals, and they start thinking that all shirts are like this,



or even worse, they start thinking all "clothing" means this shirt, what is so terrible here? Would you rather they stay naked and exposed to the elements? Insert a certain type of food, say Cerelac being fed to impoverished babies in the above example instead of clothing to help drive the point home.

After adhering to certain regulations even pharma companies can distribute their brand of drug to an impoverished or calamity hit population. Should we let them suffer with fever rather than risk the horror of them thinking that all paracetamol is crocin?

No one is stupid enough to suggest that Free Basics shouldn't have guidelines and regulatory frameworks within which to operate. They certainly should.

But banning something is a totalitarian move. There is some good to be derived out of Free Basics and we should strive to maximize that by formulating a water tight policy.

## BUT WE'LL ALL GET CONNECTED ANYWAY IN A FEW YEARS

One of the current arguments is that 100 million new internet users came online last year alone. It remains to be seen what demographic these connections came from and till what point the trend will continue to saturation without any change in policy. It's not a correlation or causation enough to say that the trend will continue

even if no change in pricing comes about. And even if it does, if you can boost the numbers with another solution, why deprive someone whose turn hasn't yet come?

Free Basics isn't a perfect solution, far from it. What we often fail to realise is that it's just a stop gap arrangement. It's not a solution that India deserves, but it's the one we have for now. Is Facebook stopping anyone else from finding a better way? If someone does offer a better way, won't the masses accept that willingly? It took a Reliance to drop costs of mobile telephony in India. Did they get rich doing so? Obviously. Did it help? Yes. Should they have not been allowed to implement their

disruption because people resented the fact that they would get rich doing so? You answer that...

But... but... Zuckerberg is evil!

Perhaps. None of us know that.

Is Free Basics really charity? Maybe. Do we believe that helping people is Zuckerberg's only true objective? Of course not! However, conscientious self interest is one of the fundamental pillars upon which the modern wave of internet giants have flourished. Do you seriously believe that, say, Google doesn't care about its share prices? So what separates this ideology from pure self interest? A notion that uplifting oneself inherently involves uplifting people at large, and thereby serving your own interest as well as others'.



For example, when Google launched Chrome for free, or when they made an open source OS like Android, they made no effort to hide the fact that it also served their own interests to find more ways to get more people online. If anything, Zuckerberg's biggest error was not being more open about this also being in Facebook's best interests. A popular dig at Free Basics is that there are no promises that it'll remain ad-free. Does Android make any such promises? Does any other "free" platform or service you are currently enjoying promise that?

### OUCH, MY PRIVATES!

A huge concern for people seems to be that Facebook will mine your data and make money off of it. Have you been living under a rock? Welcome to the internet! Your data is the new black gold! Name one company that doesn't mine your data and try and use it to get you to buy stuff? I'm not saying it's OK. I'm saying it's not new, and in fact is the norm for pretty much all the services you use – Google, Microsoft, Apple, Amazon... you name it. When they do overstep their bounds, privacy advocacy groups (the whistle blowers who pour over EULAs and such) will do what they do best and there will be a big uproar, and then we'll go back to liking like good sheep!

The bottom line is, whether there is a profit to be made or not, and whoever makes it, it's not reason enough to deprive a huge section of the population of the chance to come online.

Would we be OK if say Jimmy Wales were to try and start something similar? Surely he's not an evil profiteer like this Zuck fellow. Jimmy Wales for president! Oh. Wait. Wikipedia Zero already exists! Et tu Jimmy? Sure, they adhere to a much higher standard (or nobler one?) when it comes to privacy (<http://dgit.in/frbbsc4>), but aren't they messing with your precious net neutrality as well? If Wikipedia does it, it's Angelic ascent, but if the devil (Zuckerberg) does it then you want to clip his ghoulish wings.

I think the TRAI can easily revoke their green signal to Free Basics (should they give it in the first place). In fact, the best solution would be to start a time bound trial. A Globe Telecom white paper (<http://dgit.in/frbbsc5>) documents that "Even after the free Facebook campaign ended in April 2014, users continued to join Globe's

### DID YOU KNOW?

Two years ago Open Compute Project a Facebook Connectivity lab project was launched to build more efficient, economical data centers. Once significant progress was made designs were open-sourced. Yes, evilcorp did some good.

network at a 2x rate of the pre-campaign baseline. The campaigns had an enduring impact on the rate of Internet adoption in the Philippines, even when access to Facebook was no longer free". What we all must realise is that if you see some good in Free Basics, it doesn't automatically make you pro-evil, or against net neutrality, or a baby-killer!

### THE (SO CALLED) SOLUTIONS AND A SOBERING CONCLUSION

One argument suggests that Facebook can achieve its objectives with an ad supported model. You must've read about the growth in revenues figures that the company

most commonly suggested cap. This makes me take a step back and take a re-look at the problem. What kind of content or rather kind of media will rural folk most benefit from? Text? Is there enough vernacular text online? Are the people who really need the help even literate? Also understand that being able to write your name is hardly a measure of literacy. Can these as yet unexposed masses ever get onto the internet without a filtered experience?

When I first came online I went to alltheweb.com because someone told me to do so. Maybe a filtered experience is better for an internet-illiterate person in order not to get overwhelmed. Maybe what we'll end up doing is nothing more than taking someone who is illiterate, and putting them into the centre of a massive library with a million books, and saying, "Go uplift yourself!"

It's not like I believe that Free Basics is the way to go. I actually believe that everyone's got it wrong. Remember the OLPC example I said I would come back to? The one where illiterate kids were able



posted in another geography – the UK. What we don't realise is that ad revenues per instance of usage are indeed significantly lower than data charges paid by the consumer. If we are to really calculate whether this is or isn't a sustainable model via ads, we need to get much, much deeper into the TSP's operating costs. Simply pointing at and saying "oh look how much ad revenue (not profits) they made overall" isn't really a strong argument.

One of the other suggestions is to limit usage is by bandwidth instead of a walled garden. I remember reading 64 kbps as

to educate themselves and learn many new skills? They weren't given access to Wikipedia, they were given a heck of a lot of educational video content. That's how you uplift the backward in our country, by giving them access to video, which even Free Basics doesn't do. For me personally, I think Free Basics won't even scratch the surface of what India needs, but I'd much rather something scratch the surface while we look around for a powerful tool to bring down the huge wall that's dividing the technology haves and have nots. 🇮🇳



# worldview

OUR PICK OF THE BEST TECH ARTICLES FROM AROUND THE GLOBE

## (MUST READS)



### INSIDE THE TESLA BUILDING FACTORY

Everyone's talking about electric cars and the revolution they are about to bring. But what's going on inside these factories that are building these electric cars? This is how Elon Musk's factory looks like from the inside, set to build the car of the future. .

<http://dgit.in/InsideTesla>

### 48 HOURS IN VR

Yes, VR is slowly gaining pace and we are close to living the 'VR life'. But how would it all be to have a device hooked onto yourself all the time? Stop imagining, as this guy shares his experience spending 48 hours of his life in VR.

<http://dgit.in/48HRVR>

### DUMB SMARTWATCHES

Other than being a glorified secondary display for notifications from your smartphone, currently smartwatches aren't exactly smart. Or are they? It's worth wondering do these wearables lack and how can they be improved to serve us with additional features and use-cases.

<http://dgit.in/DmbWtch>

### THE SCIENCE BEHIND THE PERFECT KEYBOARD

We at Digit try out plenty of keyboards and find that only a handful of them to be almost perfect. For all you keyboard makers as well as users, here is a complete guide to make those keyboards great scientifically.

<http://dgit.in/SciOfKeybd>

## [NYT Corner]

### LET'S JUST OVERLOOK NETFLIX, CAN WE?



Netflix is just another streaming service and is now available in almost every country. Why so much hype about this? Maybe it has the potential to turn tables in the entertainment industry, or maybe not. After all, someone will have to win for someone to lose! <http://dgit.in/OverlookNetflix>



#### Did Bitkiller actually kill Bitcoin XT?

Bitcoin has had die-hard techies toiling religiously to get rid of its vulnerabilities. Moving out from Google to develop core Bitcoin software and then landing up in major crisis, here's everything you need to know about Mike Hearn and his venture.

<http://dgit.in/BitcoinXT>



#### 3-2-1 Victory!

Around three dozen programmers in their twenty's got together and they might have just have discovered a new code. This code probably might be 'the code' that matters the most. It's the code for self-improvement, in order to code better with a productive state of mind.

<http://dgit.in/TheHappyCode>



#### 'Tech cycle' the reason for the dull CES?

CES has always had technology from various categories up for showcase. So why are tech journalists whining about CES 2016? Was CES 2016 different compared to its previous versions? Maybe because we have the awesome technology just around the corner?

<http://dgit.in/TCCES2016>



**GOOGLE'S PLANS FOR 2016**

The Alphabet empire is huge and moreover

we have Google with its Project Loon, Project Ara, Android N, Google Glass and so much more. Check out what is Google's plan of action for 2016 in detail and what do they have for you this year. <http://dgit.in/GPOA16>

**MORE INTELLIGENT BOTS ARE HERE**

Gone are the days when you used to have arrows pointing to describe what a feature on an app does. It's taken over by bots. Intelligent bots. They guide you, teach you and even tell you what you should be using the app for. Don't believe us? Try out one of them, the SlackBot <http://dgit.in/IntlgntBots>

**HOW STUPID CAN WE BE?**

What's the stupidest password you've set to any of your accounts? Convenient to remember or are we just being too lazy? Check if it features on this list of the 25 most common, popular and stupid passwords of 2015. <http://dgit.in/PopPwd2015>

**EVERYTHING YOU NEED TO KNOW ABOUT VR**

VR will be making it big in the future, no doubt. Here's everything you need to know about Virtual Reality, the companies working around it, the products developed as well as what does the future hold, everything summed up here. <http://dgit.in/EverythngVR>

# Netflix in India: A beginner's guide

Here is a quick how-to guide for those logging into Netflix for the first time in India.



– By Sameer Mitha

A little service called Netflix has finally come to India after a lot of praying to the Gods of entertainment. This story is for those of you looking to delve into the Netflix library for the first time ever.

**Breaking down genres and content you like**

The first time you log into Netflix, you will be asked to "choose 3 you like" from a list of popular content including movies and TV shows from a variety of genres. This will help Netflix recommend content for you. For example, if you haven't seen Daredevil or Jessica Jones don't fret. After logging in, you can watch an episode or two to decide if you like it and add it to your list. You can also get recommendations based on what you watch.

**Full season at a time**

This is one of the most important things to keep in mind. If you thought you could sign up for Netflix and start watching season 3 of Blacklist or season 3 of Arrow, you may want to stick to your current source. Netflix only publishes a show once the complete season is out. This of course helps with binge-watching but is also a disadvantage since it's already out on other sources and the spoilers will surely drive you nuts.

**Time to change that broadband data cap plan?**

Another tip. On the desktop app you can manually control the streaming by pressing



CTRL+SHIFT+ALT+S. Now, on some computers this worked for us and on others it didn't. The control is the same for Windows and Mac.

**Shows to watch**

If you are new to Netflix and aren't sure what to watch we will break down some must watch shows for you based on your preferences. For this list we will try to stick to Netflix Original content for the most part.

**Action adventure**

**Daredevil:** Yes, it's the comic book character brought to life on the small screen in quite the epic adventure. You may want to get to this one soon, as season 2 is just around the corner.

**Jessica Jones:** It's better if you don't look at it as a superhero show but rather a detective show with some supernatural elements thrown into the mix. It's quite interesting.

**Sense 8:** A mind-bending series where 8 individuals are connected through some supernatural force. This TV show will definitely keep you hooked.

**Comedy**

**Master of None:** Dating, working, growing up even though you love wearing super hero shows, if you want to see real life problems and laugh at them, then this is the show for you.

**Drama**

**Narcos:** The true story of Colombia's infamous violent and powerful drug cartels fuels this gritty gangster drama series. Need we say more?

**House of Cards:** In its third season House of Cards has left people begging for more. Pure politics and a whole lot of drama is what this epic TV series brings to the table. Did we mention it has Kevin Spacey who breaks the fourth wall during the show?

We could go on and on about the shows and movies on offer, but we think you have enough to start with. You can always let us know which Netflix Original TV show or film caught your attention and why.

**Documentaries**

There are a bunch of documentaries available on Netflix and if you are one that enjoys documentaries then this is definitely the service for you. We won't list documentaries for you here. Rather, we recommend, you to go through the list as the descriptor is good enough to give you an idea of what the documentary is about.

<http://dgit.in/GuideToNetflix>





## WAIT FOR H.265 HVEC NOW OVER



H.264 video encoding will slowly be replaced by the newly developed H.265. H.265 is a high efficiency video encoding standard, saving 50% of bitrate with higher precision thus guaranteeing efficient compression while maintaining the video quality as well.  
<http://dgit.in/H265exp>

## WHAT COMES AFTER EMAIL?



Email is just too damn annoying and irritates us with possibly every notification it comes with. We still use it. Lack of options or have we not kept pace with the developing communication technologies? Can this be the future of Email? Or is it already?  
<http://dgit.in/AfrEmail>

## APP-OCALYPSE TO CONTINUE? MAYBE NOT.



From accessing the web on browsers we shifted to apps for ease. Has the time come to go back to the web browsers, just for the ability to browse everything from one single app or do we continue using individual apps for every website?  
<http://dgit.in/BrowserOrApp>

## HOW DO YOU SELL YOUR SUBREDDIT



What would you do when someone's about to kill your favourite subreddit? Here's the story of the subreddit r/Frisson, starting from the phase when it started gaining attention to the point where the creator sold it for \$1000, managing the subreddit to stay available.  
<http://dgit.in/SubredditSold>

# The future of Wi-Fi in India and the world

A technology known as Next Gen Hotspot, or Hotspot 2.0, has been brewing for a few years, and is finally ready to come to the fore.

– Prasad Banerjee

**Y**ou know how connecting to public Wi-Fis can be a big pain in the backside? Walk into the airport, connect to the public Wi-Fi there, and you don't get the OTP required to sign in. More often, you won't even get to the OTP stage, since the sign-in page itself will not open. Why? Because there are thousands like you at the airport, who are all connected to the network, and are trying to sign on to it. As a result, the network is congested, leading to issues that most of us complain. While bandwidth remains the chief constraint in public Wi-Fi in India and even overseas, the efficiency of the system isn't determined by it alone. Enter, Next Generation Hotspot (NGH).

## Next Generation Wi-Fi Hotspot

There are two things that you need to know about NGH. The first — it has the potential to change the Wi-Fi experience forever — and the second is that the Indian government has shown interest in it. The Wireless Broadband Alliance (WBA) has been spearheading the adoption of this technology.

NGH's goal is to bypass the sign-on process. As public Wi-Fis become more important with connected and smart city initiatives, it is important to provide a seamless experience by standardising the process. Through this, a user's device can connect to a Wi-Fi network automatically, with no need for One Time Passwords (OTP), usernames and so on.

Also known as Hotspot 2.0, the technology is based on something called

Passpoint. This is a certification, signifying that your device is capable of 802.1x and 802.11u functionalities. The two together can bypass the login/sign-on process that you otherwise have to go through. If you're wondering IEEE 802.1x is responsible for authenticating networks, while 802.11u takes care of the authentication and network identification processes.

Shrikant Shenwai, CEO, WBA, explains, "It gives you an almost cellular like experience. For that, your devices have to support certain standards. Your network infrastructures also have to support these capabilities,



and so do the operators. On paper, it sounds like there's a lot of work that OEMs, operators and others need to do. But Shenwai explains that most major vendors (both network vendors and device manufacturers) already support this technology on the infrastructure level. It's just a matter of implementing the technology now.

To simplify, imagine walking into the airport and finding your mobile already connected to the network. With NGH, your smartphone finds access points using a

process known as "beaconing". It sends out data packets to find access points, which are then authenticated and connected.

Connections through the NGH technology are secured using the WPA2 protocol, which ensures security as well. When you go to a different country, your smartphone can connect to a local telco's network there, based on who your home operator has tie-ups established.

## Why is NGH relevant for India?

While NGH doesn't necessarily solve the problem of bandwidth, Shenwai explains that automatic authentication puts less load on the network, since users are not connected to the network during verification/connection attempt processes. NGH may not be the complete solution, but it's a part of the broader picture.

Initiatives from corporates, like that taken by Google for Indian railway stations, are also important. NGH currently isn't operational anywhere in India, but Shenwai states that India not having a history of good connectivity solutions and Wi-Fi gives it a better chance to establish something that is the best in the world. Devices as old as the Samsung Galaxy S3 are capable of supporting the technology. With the right implementation, NGH can end up being the future of Wi-Fi, and a key component of India's smart cities initiative. The technology isn't new, but has been brewing all over the world and is finally ready to be unleashed to the public.

<http://dgit.in/FutureOfWifi>



## TED-ED

TED-Ed extends the research from educators around the world with animations to explain great ideas to its viewers.



You can also nominate an educator or an animator whom you want to see on the channel. Whether you are a teacher or a high school student, these TED talks might be more worthy than any classroom sessions

<http://dgit.in/TedEductn>



To get all these links in one easy to read page, make sure you blip this page from your smartphone.

## (PRODUCT LAUNCHES)

### TP-LINK TALON AD7200



TP-Link Talon comes with the new 802.11ad standard, which supports bands of 2.4GHz, 5GHz and an additional 60GHz. You also get four full Gigabit ports and a USB 3.0 port, also featuring WiGig. Price - TBA

### SAMSUNG POWERBOT ROBOT VACUUM



Samsung launched its POWERbot Robot vacuum. It has 20W of suction power and features a cycloneForce design, a built-in digital camera mapping your home and mobile app support. Price - \$599.99

### ASUS ZENWATCH 2



Asus ZenWatch 2 is available in two variants - 1.63-inch and 1.45-inch displays. It's powered by a Snapdragon 400 processor with 512 MB RAM and 4GB memory, and an option of two straps. Price: ₹11,999

## PICTURE PUZZLE



ABSOLUTE  
TIMEPASS

UNJUMBLE  
ON YOUR MOBILE



DOWNLOAD BLIPP APP ► FILL SCREEN WITH IMAGE ► BLIPP IMAGE INTO LIFE!

## Top 3 YouTube Picks

Make sure your boss doesn't catch you goofing off with one of these videos playing on your screen



**Fly on a Hoverboard, for real**  
Duration: 07:47

Check out Alexandru Duru who set a world record of flying on a hoverboard created by himself using motors and propellers  
<http://dgit.in/Drone2HBoard>



**EHang 184**

Duration: 05:00

EHang 184 is an autonomous drone that can fit one human for flight which has passed 100 manned tests already.  
<http://dgit.in/EHang184>



**Boeing 777 Wing Test**

Duration: 01:31

Did you know how much pressure can the wing of a Boeing 777 take? Stop scratching your head and have a look here.  
<http://dgit.in/777WingTest>





Developing for Windows 10? Don't be so hopeful about the built-in Windows app store.  
<http://dgit.in/Wait10>

# Getting started with coding

>>Getting into programming world was never so easy but the humongous scale of the Internet enables you to do so.>

by Pavan Mhaske

## Introduction

You must've always wondered how Google, Facebook, Youtube or your favourite android game was built and needless to say, you've had better ideas than those. But you thought 'oh that's programmers work' and ended the thought right there because you didn't know how to code. Whether you want to learn to code for serious work or just as a hobby, the Internet is your best teacher. A programming language can be a boon that gives rise to a new hobby. Here, we hope to help you out with a beginners guide to learn how to code online.

Before you start programming keep in mind the final goal you are into, either you are learning to code for passion or profession. Do not limit yourself to a particular language, be flexible and try your hand on different languages. What programmers will not tell you is that learning a programming language is very easy once you get to know the basics of the particular language.

## Starting – The Hardest Part

Programming is basically commanding your computer to do specific tasks through a language that the computer understands. Learning a programming language is an easy task, what matters is your problem-solving capabilities and how creative you are with your approach towards solving problems. Selecting particular tasks, with



which you want code makes a difference here. So before choosing a language, select a project that interests you and then accordingly opt for a language best suited for it.

To start with, you have to know the syntaxes, operators, and functions. So starting with an ancient but powerful language like C++ will give a better idea of these factors. Then once you get a hang of the concepts you can tackle the more recent languages easily. Now as said previously, first choose a project and then a language that serves the purpose of the project. If you wish to improve a website's looks or want to build a website of your own from the ground up you definitely should learn HTML/CSS and then move on to JavaScript, PHP, etc. to add functionality. If you wish to create software

## \*Coding Matters



### \* Donald Trump Programming Language?

>>Rice University students came up with a programming language called TrumpScript, that reflects Donald Trump's personality.

<http://dgit.in/TrumpScript>



### \* Most useful foreign language of this century?

>>Programming languages to be considered as crucial foreign languages of this century, what do you think?

<http://dgit.in/LearnCding>



### \* Google set to partner with Udacity

>>Google is all set to partner with Udacity to provide free programming lessons via service called Deep Learning.

<http://dgit.in/UdcityGoogle>



for computers or build apps and games for mobile then C++, Java, Python and Swift for iOS are the languages you'd want to consider. There many sites that can give you an overview of these objectives and help you learn these languages efficiently. Here are some sites you can try out to learn the basics of programming.

### Learning resources

Gone are those days where you would have to enrol for a Computer Science course in order to learn programming. Apart from college degrees, students would avail the services of a private tutor or join private coaching classes for mastering their programming skills and thus, gain advantage over their peers. The Internet then comes into the picture, after all, why confine yourself to the restricted timing of your coaching class or private tutor. Instead, learn and master your skills online according to your convenience, here we have some websites that you should consider if you are starting off with a new programming language.

#### 1. Codecademy

Codecademy provides a free learning platform to beginners by presenting a variety of courses on their site. There is a dedicated



Codecademy

forum with specialised threads where you can seek help if are stuck on a certain project. So you can easily get help from members of the forum. At the end, you can build a website of your own. However, there are no video instructions provided, so users have to solve all queries on the forums. Courses offered are HTML, CSS, JavaScript, jQuery, PHP, Ruby, Python, API.

#### 2. Code school

Code School offers the basic lectures for free followed by the advanced lectures being part of a paid service. But it provides video tutorials with even for the most basic terminology. You can execute your code in the browser itself and along with the video tutorials you have occasional quizzes thrown in.



Code School

#### 3. Khan academy

Khan academy is a no-brainer when it comes to learning online and it has an excellent set of lectures for programming. There are

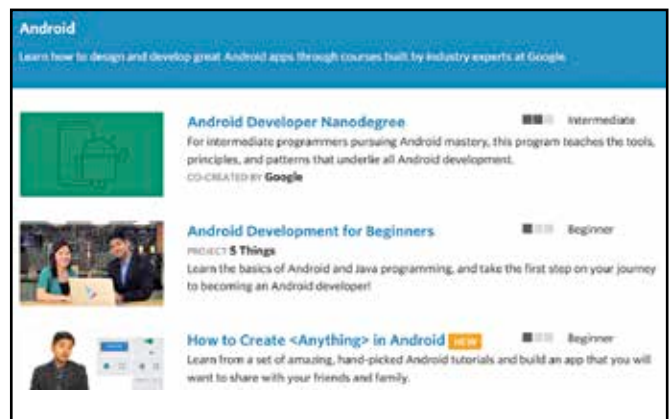


Khan Academy

machine-graded assignments and video tutorials to help you get started and provide help if you are struck. Khan academy does not offer a set of programming languages, but it deals with programming basics and approaches to coding that could be applied to a vast array of languages.

#### 4. Udacity

Udacity provides video tutorials along with quizzes interspersed to make you think about the code. Video tutorials are 2-3 minutes long and that is a good thing because short lectures don't bore you.

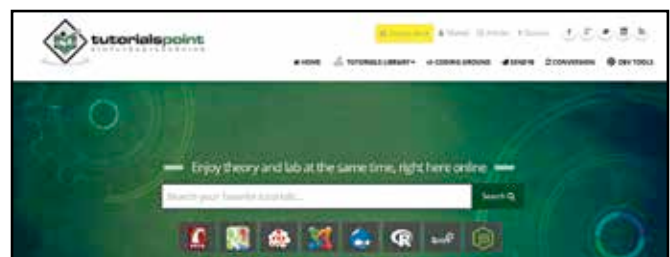


Udacity

Courses offered are Web Development, HTML5, Python, Java, Computer Science, Algorithm, AI.

#### 5. Tutorials Point

Tutorials Point has on offer free beginner level educational resources for almost all major programming languages used today. Their catalogue for tutorials and courses is very vast with



Tutorials Point

languages segregated to the projects. In the 'Coding Ground' section of the website you can practice, edit, run, compile and share your results.



## 6. W3Schools

W3Schools is a free tutorial website that offers tutorials for web development and design to beginners. It has neatly segregated sections



W3schools.com for quick reference

according to the tasks for which particular programming languages are used. Courses offered are HTML/CSS, XML, JavaScript, SQL, PHP, ASP.NET.

Get a better idea of overview of programming languages from this Lifehacker article <http://dgit.in/WhichLang>

### Basic Web Development Languages

If you wish to work over web development building interactive websites or even a simple website page, you need to have knowledge about the programming languages that are used to code for web development. You also need to decide whether you want to work on front-end or server side development. Basically, it means if you want work on how a website would look to users(front end) or managing the database(server side). Here some languages you can learn to give a start to your web development dream.

### JavaScript

JavaScript is one of the most popular and dynamic programming languages used for creating and developing websites. This language is capable of achieving several things including controlling the browser, editing content on a document that has been displayed, allowing client-side scripts to communicate with users and also asynchronous communication. It is one of the languages that is accepted by all major browsers.

### PHP

PHP is a free server-side programming language that is used for not only web development but also as a general purpose programming platform. It is one of the easiest programming language s because of its simple and clear syntaxes and for having few keywords. Facebook uses a lot of PHP and WordPress, the popular CMS is also programmed using PHP.

### HTML/CSS

HTML/CSS are not programming languages but are markup languages that are used to design web pages. HTML is used to design a

## \*pointers

>>Interesting developer news



### \*Which OS do I choose?

>>As a programmer, which operating system should you stick to if you are getting into the world of programming.

<http://dgit.in/MacOrWin>



### \*Learn Python under 45 minutes

>>Learn Python in a single video along with pretty good cheat sheet and other resources to help you master the nifty language.

<http://dgit.in/AllAbtPyt>



### \*The Poetry of Programming

>>Linda Liukas from CodeAcademy in her Ted talk shares programming insights about it's importance, structures, algorithms and much more.

<http://dgit.in/ProgPoetry>



### \*Confessions of a programmer

>>Here are some untold secrets about programming that every programmer should know!

<http://dgit.in/ProgSecrets>



static pages and CSS is used to style your page. If want to work in front-end development then you should familiarise yourself with these languages.

### Languages that let you code across platforms

If you want start developing apps that can run across multiple platforms like iOS and Android, you would need to code in a language that isn't native and has little overhead. iOS uses Swift and Objective-C while Android uses Java. So you need a language that can work on both platforms.

### RoboVm

RoboVm enables programmers to code iOS apps using Java language. So you can code once and get your app working on both platforms. The

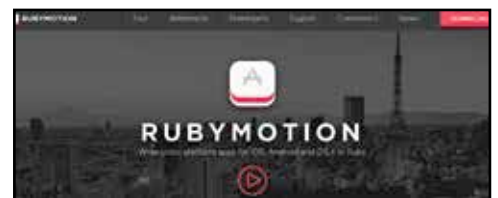


Native iOS apps in JAVA made easy

folks behind RoboVm came under the scanner when they said they'll be moving away from the open-source philosophy for all future versions.

### RubyMotion

RubyMotion is an established tool used by thousands of businesses to create iOS, Mac OS X and Android apps using the Ruby programming lan-



Making apps feel right at home

guage. RubyMotion claims to be essentially the same as native languages since they run atop the same runtime technologies.

### Xamarin

Xamarin is another big name in the cross-platform app development business. It comes with a good feature set to test your apps across 2,000 real devices on their cloud. Xamarin acquired RoboVm in late 2015.

### Practice Resources

After you get used to the programming language that you've opted for, you need to practice and



hone your skills and what better way to do that than to sign-up for a competitive service like the ones we are going to be speaking of.

### 1. CodeChef

CodeChef is global is competitive programming platform that hosts competition in 35 programming languages for students and soft-

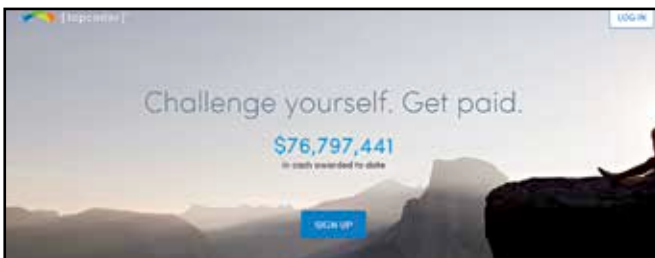


CodeChef's monthly cook-offs are to die for

ware developers. If you feel that you are not yet ready to compete, go through the Practice section and brush up your skills. Like all other platforms, they have problems across varying difficulty levels.

### 2. TopCoder

TopCoder holds an array of competitions for coders which are actually real world problems faced by TopCoder's clients. You can get individual attention of the TopCoder review board for every



Solve real world issues on TopCoder

submission. Their annual tournament – TopCoder Open – is quite popular and is conducted in multiple stages across multiple countries because of its massive scale. Did we mention that you can make a lot of money also?

### Learn code while gaming?

Some services have done a pretty good job of gamifying the entire learning process. Here are some good services that have caught our eye.

### 1. CodeCombat

There is nothing in this world that cannot be made into a game, and CodeCombat is one such service which has made it really easy to learn programming through playing a game. CodeCombat is essentially a role playing game in which you control your character by typing in code. Each stage teaches you a new aspect of whatever language you're currently learning. As the game progresses, newer elements are introduced and the complexity scales accordingly. All basic beginner level syntaxes and algorithms are covered.

### 2. CodeWars

CodeWars differs from CodeCombat as users are given different tasks with some reference or the other to a Japanese martial art called Kata. Tasks include determining the output of a code, entering the right input code to get a certain output result, creating a function to get desired output and some more. This approach is more challenging and all the more fun since it makes you think of multiple ways towards solving a problem. Even when you Sign Up for the first time, you'll be tested.

### Simple projects to practice

So what should you do after learning a new language? Why practise more by making some cool project. Start working on your 'ideas' which are much better than currently existing solutions. Here are some basic projects that are not only easy to implement and debug but will help you strengthen your concepts as well. You should definitely work towards implementing sorting algorithms since they end up being used a lot. Start with simple sorting programs and scale the amount of data you are working with. You should even go ahead and try creating a personal website and squeeze in as much of your newly acquired programming skills into bringing the site to life. If at all things don't go your way, you can always drop in on of the many programming centric forums and initiate a conversation. There you go, you've taken your first step into the programming world, Bleed Binary! >

## \*Links Inventory



### \*Wolfram introduces its programming lab

>>Wolfram programming lab enables anyone who wants to learn programming and algorithms.

<http://dgit.in/WolframLab>



### \*Simple ways to simplify your code

>>Do you think that your code is complex and hard to debug? Avoid common mistakes with these steps.

<http://dgit.in/SimplifyCode>



### \* Defensive Programming in Python

>>Here are some tips to help you practice defensive programming with Python.

<http://dgit.in/DefensivePython>



# digit RECOMMENDED BUYS

From smartphones to graphics cards, here's what we recommend for your next purchase!



## TOP 3 LAPTOPS UNDER 20K

Brand	Model	Price (in ₹)
ASUS	EeeBook E402MA-WX0062T	14,990
Acer	Aspire ES1-131	17,720
XOLO	Chromebook (HR-116R)	9,999



## TOP 3 MINI PCs

Brand	Model	Price (in ₹)
Gigabyte	Brix-GB-BXi5H-5200	27,299
ECS	LIVA Core	34,499
ASRock	Beebox N3150	9,649



## TOP 3 ANDROID SMARTPHONES

Brand	Model	Price (in ₹)
Samsung	Galaxy Note 5 (32 GB)	47,900
Huawei	Nexus 6P (64 GB)	39,499
Samsung	Galaxy S6 (32 GB)	36,900



## TOP 3 BUDGET SMARTPHONES

Brand	Model	Price (in ₹)
Lenovo	Vibe K4 Note (16 GB)	11,998
Motorola	Moto G Turbo (16 GB)	12,499
Asus	Zenphone 2 (16 GB)	17,999



## TOP 3 SMARTWATCHES

Brand	Model	Price (in ₹)
Apple	Sport A1553 (42mm)	34,900
Motorola	Moto 360 (2nd Gen)	19,999
LG	Urbane W150	22,999



## TOP 3 TABLETS

Brand	Model	Price (in ₹)
Microsoft	Surface Pro 4 (128GB)	89,990
Microsoft	Surface Pro 3 (128GB)	73,990
Apple	iPad Pro (128GB)	79,900



## TOP 3 DSLR CAMERAS

Brand	Model	Price (in ₹)
Nikon	D4 (Body only)	3,49,950
Canon	EOS 5D Mark-III (Body only)	1,82,956
Nikon	D800E (Body only)	1,66,660



## TOP 3 POINT AND SHOOT CAMERAS

Brand	Model	Price (in ₹)
Canon	PowerShot G3x	57,400
Sony	DSC-RX100M4	66,000
Canon	PowerShot G9x	32,005



## TOP 3 GAMING HEADPHONES

Brand	Model	Price (in ₹)
SteelSeries	Siberia V2	4,390
Kingston	HyperX Cloud	3,749
Creative	Soundblaster Tactic 3D Sigma	8,890



## TOP 3 BUDGET IEMs

Brand	Model	Price (in ₹)
Cowon	EK2	1,424
Brainwavez	Delta	1,599
Sennheiser	CX180 Street II	990



■ Basic rig = ₹21,389 ■ HTPC = ₹32,690 ■ Entry-level gaming = ₹52,193 ■ Mid-range gaming = ₹77,234 ■ Ultra high-end = ₹2,83,944 ■ Digit Test Rig = ₹4,61,522

## BASIC RIG

Mini-PC	Intel NUC NUC5CPYH	10,250
SoC	Intel N3050	0
Connectivity	802.11ac + Gigabit Ethernet + Bluetooth 4.0	0
Audio	Realtek ALC	0
USB	2x USB 3.0 + 2x USB 2.0 (Including 1x Charging capable)	0
OS	Linux	0
Power Supply	Adapter included	0
Mouse	Logitech MK220 Wireless Combo	1110
Keyboard	Bundled	0
RAM	Gskill F3-1600C11S-4GSL	1,505
HDD	Kingston SSDNOW UV300 120GB	3,099
Sub-total	(Excluding Monitor)	15,964
Monitor	Dell E1916hv 18.5 inch LED	5,425
Total		₹21,389

## HTPC

Processor	AMD A10-7700K	10,000
Motherboard	ASUS A88XM-A	6,588
RAM	G.Skill RipjawsX DDR3 4 GB (2 x 2 GB) PC RAM (F3-12800CL9D-4GBXL)	2,137
HDD	Western Digital WD30EZRX 3TB	8,715
Graphics Card	AMD R7 (384 Cores)	0
PSU	Corsair CX430 V2	3,150
Speakers	None	0
Optical Drive	ASUS DRW-24D3ST	990
Mouse	Logitech MK220 Wireless Combo	1,110
Keyboard	Bundled	0
Sound Card	None	0
Monitor	None (your TV)	0
Cabinet	Cooler Master N200	3,550
Total		₹32,690

## ENTRY-LEVEL GAMING

Processor	AMD FX8320	11,500
Motherboard	MSI 970A-G43	5,395
RAM	ADATA Premier DDR3 4 GB (2x 2 GB) 1600 MHz RAM	1,850
HDD	Seagate Barracuda ST1000DM003 1TB	3,591
Graphics Card	Sapphire R7 360 2GB	9,500
PSU	Corsair CX430 V2	3,150
Speakers	Philips MMS4040F - 2.1 Channel	2,899
Optical Drive	ASUS DRW-24D3ST	990
Mouse	Logitech MK200 (Bundle)	788
Keyboard	Logitech MK200 (Bundle)	0
Sound Card	None	0
Sub-total	(Excluding Monitor and Cabinet)	39,663
Monitor	BenQ RL2240HE	9,780
Cabinet	Antec X1-T Gaming	2,750
Total		₹52,193

## MID-RANGE GAMING

Processor	Intel Core i5-4460	13,985
Motherboard	ASUS B85M-GAMER	6,284
RAM	Kingston (2x 8 GB) HX318C10F/8	5,900
HDD	Toshiba 1TB DT01ACA100	3,489
Graphics Card	ASUS STRIX GTX 960 DC20C	17,899
PSU	Corsair VS650 650W	4,108
Speakers	Harman Kardon Soundsticks III	8,999
Optical Drive	ASUS DRW-24D3ST	990
Mouse	CM Storm Devastator (Bundle)	3,050
Keyboard	CM Storm Devastator (Bundle)	0
Sound Card	None	0
Sub-total	(Excluding Monitor and Cabinet)	64,704
Monitor	BenQ RL2240HE	9,780
Cabinet	Antec X1-T Gaming	2,750
Total		₹77,234

## ULTRA HIGH-END GAMING

CPU + Cooler	Intel Core i7-6700K + Cooler Master Seidon 120V	32,499
Motherboard	Gigabyte GA-Z170X-Gaming	21,699
RAM	Corsair Vengeance (2x 8 GB) CMK-8GX4M1A2400C14R	9,810
HDD	WD WD30EZRX 3TB + Samsung 850 Pro 256GB SSD	19,364
Monitor	ASUS PB279Q 4K UHD	62,500
Graphics Card	MSI GTX 980 Ti Gaming 6G	56,299
Cabinet	Corsair Graphite 780T	13,099
PSU	Antec HCP-1000 Platinum 1000W	16,750
Speakers	Logitech Z906 5.1	17,695
Optical Drive	LG Blu-ray WH14NS40 RW	5,999
Mouse	Logitech G502 Proteus Core	4,480
Keyboard	Corsair Vengeance K70 RGB	14,600
Sound Card	ASUS Xonar D2X 7.1	9,150
Total		₹2,83,944

## PRIMARY DIGIT TEST RIG

Processor	Intel Core i7 - 4960X (Extreme Edition)	71,950
Motherboard	ASRock X79 Extreme 9	27,846
RAM	Corsair Dominator 2133MHz (8GB x 4) (CMD32GX3M4A2133C9)	27,710
HDD	Toshiba DT01ABA100V	3,830
SSD	SanDisk Extreme II 240GB (x2 for HDD testing)	34,000
PCIe SSD	Intel 750 NVMe + Kingston HyperX Predator 480 GB	126,999
Graphics Card	Zotac GeForce GTX TITAN X	86,990
Cabinet+ Cooler	Cabinet (NA) + Noctua NH-D15	8,199
PSU	Corsair RM1000X	12,599
Monitor	LG 29UC97C	40,000+Tax
Optical Drive	NA	NA
Mouse	Razer Ouroboros Elite	9,899
Keyboard	Tt eSPORTS Meka G1	11,500
Total		₹4,61,522





## Netflix over 75 M subscribers

Netflix earned \$43 million and about 5.59 million subscribers in the fourth quarter, What are they planning next? <http://dgit.in/NetflixQ4>



## Unlock hidden Netflix shows

Proximate is a pretty handy extension that gives you access to Netflix shows that aren't available in India. <http://dgit.in/NfxProximate>

Price Watch

# SPEND SMART

Wondering which gaming mouse to buy or which TV to upgrade to? Don't worry! We've got you covered.



## GAMING MICE

Brand	Model	Type	Max. DPI	Buttons	Sensor Type	Game Genre	Coating (Finish)	Price (in ₹)
Corsair	M65 RGB	Wired	8,200	8	Laser	FPS	Rubber (Soft)	4,650
Asus	ROG Gladius	Wired	6,200	6	Laser	RTS/FPS	Rubber (NA)	4,700
Logitech	G502 Proteus Core	Wired	12,000	11	Laser	FPS/MMORPG	NA (Matte)	4,955
SpeedLink	Prime Z-DW	Wired	3,200	9	Optical	RTS/FPS	Rubber (NA)	5,358
Tt eSPORTS	Theron Infrared	Wired	4,000	8	Optical	RTS/FPS	Rubber (Matte)	5,432
Tt eSPORTS	VOLOS	Wired	8,200	14	Laser	MOBA/MMORPG	Rubber (Matte)	5,798
Tt eSPORTS	Level 10M	Wired	8,200	7	Laser	RTS	NA (Glossy)	6,369
Corsair	Scimitar RGB	Wired	12,000	17	Optical	MOBA/MMORPG	Rubber (Soft)	6,999
Razer	Mamba TE	Wired	16,000	9	Laser	RTS/FPS	Rubber (Matte)	7,299
Cougar	700M	Wired	8,200	8	Laser	RTS/FPS	NA (Matte)	7,769
Roccat	Tyon	Wired	8,200	14	Laser	FPS/MMORPG	Rubber (NA)	7,855
Roccat	Nyth	Wired	12,000	18	Laser	MMORPG	Rubber (Matte)	8,975
Gigabyte	Thunder M7	Wired	8,200	16	Laser	MMO	NA (Matte)	9,714
Mad Catz	R.A.T. 9	Wireless	6,400	8	Laser	RTS/FPS	Rubber (Matte/Glossy)	16,403
Razer	Star Wars The Old Republic	Hybrid	5,600	17	Laser	MMORPG	Rubber (Matte)	17,285



## LED TVs BELOW ₹50,000

Brand	Model	Display Size	Functionality	Native Resolution	HDMI Ports	USB Ports	Viewing angle (H/V)	Price (in ₹)
Onida	LEO32HAIN	31.5-inches	Bluetooth	1366 X 768	3	3	178 / 168	27,490
Samsung	UA32J4100AR	32-inches	NA	1366 X 768	2	2	178 / 168	31,900
Funai	100FD714	40-inches	NA	1920 X 1080	3	1	178 / 168	31,990
Samsung	UA32J4300AR	32-inches	Dongle ready	1366 X 768	2	2	178 / 168	34,900
LG	32LF595B	32-inches	3D   WebOS	1366 X 768	2	2	178 / 168	35,900
Videocon	VKC40FH0ZMA	40-inches	NA	1920 X 1080	2	1	178 / 178	36,990
Sansui	SKW40FH18XA	40-inches	Android	1920 X 1080	3	3	178 / 178	39,990
Videocon	VJU32HH08CAM	32-inches	Windows 10	1366 X 768	2	2	178 / 178	39,990
Vu	LED40K16UHD	40-inches	NA	3840 X 2160	4	3	178 / 178	40,000
Onida	LEO40FAIN	40-inches	3D   Android	1920 X 1080	3	3	178 / 168	40,490
Micromax	50B5000FHD	50-inches	NA	1920 X 1080	2	2	176 / 176	40,500
Micromax	42C0050UHD	42-inches	Android	3840 X 2160	3	3	178 / 178	41,699
Videocon	VMA40FH18XAH	40-inches	Android	1920 X 1080	3	3	178 / 178	42,490
LG	32LF6300	32-inches	WebOS	1920 X 1080	3	3	178 / 178	43,900
Sansui	SMN42QH0ZSA	42-inches	NA	3840 X 2160	4	4	178 / 178	45,800
Vu	VU4K43S6535	43-inches	Android	3840 X 2160	3	3	178 / 178	46,000
Samsung	UA40H4200AR	40-inches	Bluetooth	1366 X 768	2	1	178 / 178	48,500
Sansui	SKY48FB11FA	48-inches	NA	1920 X 1080	4	2	178 / 178	49,990
Sansui	SME43QX0ZSA	43-inches	NA	3840 X 2160	2	3	178 / 178	49,990
Vu	LED55K160GAU	55-inches	NA	1920 X 1080	2	1	178 / 178	50,000





## Hideo studios

Metal Gear Solid franchise developer may soon develop some PS4 games. Here's why.  
<http://dgit.in/HideoPS4>



## New 4-inch iPhone

Apple to launch iPhone 5e which is going to be an enhanced version of iPhone 5s.  
<http://dgit.in/iPhone5e>

# Gaming laptops

The best a gamer can get on the mobile platform

Agent 001

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There are PC gamers and then there are PC gamers. I can tell you in no uncertain terms that PC as a gaming platform has to be a desktop, because a laptop (in terms of performance per rupee) still doesn't match up to a full-fledged desktop PC's performance prowess when it comes to unbridled gaming. That's a fact. So if you're a fence-sitter, not really sure whether you should buy a gaming laptop or desktop for gaming, I suggest you flip over to our Killer Rigs page and contemplate on the several custom PC configurations at your disposal. Trust me, it's the best possible scenario for a PC gamer. However, if mobility is an important factor – something that you can't compromise on – then it makes sense to invest in a gaming laptop. From the trend in my inbox at least over the last 12 to 18 months, more and more college kids and young professionals are preferring to buy a gaming laptop these days.

As far as options available in the market, if money isn't a concern, then check out the MSI GT72 6QD – This machine is the winner of our Zerol Awards for best gaming notebook of 2015. It's an undisputed king among all gaming laptops available in the market. Weighing in at 3.8 kg, it's no ultrabook, but who cares? Just take a look at its specs – 17.3-inch Full HD display with NVIDIA GSync, powerful quad-core Intel Core i7-6700HQ processor clocked at 2.6 GHz (it can reach up to 3.5 GHz), 16 GB DDR4 RAM clocked at 2133 MHz, 1 TB 7200 RPM hard drive and discrete NVIDIA GeForce GTX 970M graphics with 3 GB GDDR5 memory. It packs a powerful



punch in the face of all games you'd want to play, even the very latest. The laptop also has arguably the best audio performance I've experienced on a mobile PC platform. So it doesn't only offer best-in-class visuals but very good audio fidelity as well. This will cost you ₹1.65 lakhs.

The next best gaming notebook money can buy right now in India is the HP Omen 15-inch laptop which packs quite a substantial firepower in a slim, trim, sub-2 kg shell – a commendable achievement. The HP Omen 15 packs in a PCIe SSD giving it a massive boost over traditional SATA drives, and it also has an Intel Core i7-4720HQ chip, 8 GB DDR3 RAM, and NVIDIA GeForce GTX 960M graphics with 4 GB GDDR5 memory. While the Alienware has fallen off its wagon this season, the HP Omen ensures it satisfies the bling factor for laptop gamers looking to flaunt their machines at LAN gaming parties. The HP Omen 15 is available for ₹1.6 lakhs.

Apart from ASUS ROG 751, which is also a great machine to look into, Acer has made some commendable strides in the gaming market, and its Aspire V15 Nitro Black Edition comes close on the heels of

the HP Omen 15 in terms of pure gaming performance. The Aspire V15 Nitro is right up there among the best of the best when it comes to raw performance and gaming proficiency. It's also the only gaming laptop I've seen in the past year or so which supports 4K UHD (3840 x 2160) screen resolution – a bit of an overkill for gaming but should be useful which watching movies and videos. This notebook should cost you around ₹1.1 lakhs.

If you want to spend under ₹1 lakh, I suggest looking into the Lenovo Y50-70 (₹86k), HP Pavilion 15-ab214tx (₹75k) and ASUS ROG G552LJ (₹69k) are good options to explore. All are very good performers, with the Lenovo Y50-70 being the best of the bunch under ₹1 lakh price point. My advice to you when it comes to purchasing a gaming laptop is to try and pick the best possible performance machine, even if it means extending your budget by a little bit. Trust me, because upgrading core components of a gaming laptop may not always be possible, the ₹5k-₹10k extra that you pay now will hold you in good stead when it comes to extending your gaming laptop's relevant life span. **[1]**





## OpenSSH fix

OpenSSH bug that could be exploited to get access to critical crypto keys fixed.  
<http://dgit.in/SSHbugFix>



## BoomStick by BoomCloud 360

BoomStick improves depth and quality of your headphones by simply plugging them into the BoomStick. <http://dgit.in/Boomcloud360>

Agent 001

## The ultimate laptop

Hi, I'm looking to buy a Windows laptop in the coming months for around 50k. I'll basically be using my laptop for AutoCAD and various other CAD softwares as well as for coding. Other uses would be for reading, watching movies, surfing the net, listening to music and playing games like GTA 5 or NFS.

I need a laptop which is a good performer as well as stylish, with a good battery life and should have enough storage and connectivity options with an optical drive; a backlit keyboard is important. This laptop should last me for a couple of years.

P.S. – A 14 or 15-inch screen laptop is a must and maybe even a fingerprint scanner.

–Pranav Kumar

Hi Pranav, you are the type of customer that's the worst nightmare of most laptop brands. However, nothing wrong in giving them a hard time. To begin with let me just highlight that most of what you're expecting to be present in one single laptop doesn't actually exist in the real-world, and that's the harsh reality that you'd have to live with, Pranav. What that means is that you'd have to make compromises, and no one loves doing that,



Acer Aspire E5

especially not me while I'm trying to recommend products to buy to our readers. However, we'll try to get as close to your desired laptop as possible.

A laptop that can run AutoCAD and latest games clearly means business in the performance department. Such a high-performing laptop cannot offer great battery life, from my past experience. Style is extremely subjective, so for now I'm just sticking to your price constraint more than anything else.

Check out the HP Pavilion 15 ab-522tx, Acer Aspire E5-574G and ASUS K555LJ-XX135D which seem to be priced around the ₹50k mark. Both the HP and Acer laptops are almost similarly specced – 2.3 GHz Intel Core i5-6200U, 8 GB DDR3 RAM, 1 TB hard drive and the same NVIDIA GeForce GT 940M graphics. Where the Acer machine comes with 2 gigs of GDDR3 memory, the HP claims to offer 4 gigs of GDDR3 memory. The ASUS comes with an Intel Core i7 chip (albeit a 5th generation one) that can clock up to 3 GHz, 8 GB RAM, 1 TB hard drive and 2 GB NVIDIA GeForce 920M graphics. I suggest buying one of the HP or Acer laptops.

## Need an inexpensive laptop

Hi Agent! My six-year-old laptop recently conked off for good, and my local fixer can't seem to resuscitate it. This is where I need your help as I want a laptop at 25k for basic use – browsing websites and video conferencing with my son who lives abroad. Nothing more. My previous laptop had a 13-inch screen, but a 14-inch screen would be nice to have. What are my options in the market?

–V. Menon

My condolences on the dead laptop, Mr Menon. It's never easy to let a prized digital possession go into the dumpster. Prasid from our team recently checked out popular inexpensive laptops under 20k – but they all come with an 11-inch screen. If you want to go check them out at a store before purchasing them, sure, be my guest. The ASUS EeeBook E402MA is the best of that bunch for now – but it only has a VGA webcam.

Here again I've come up with a couple of laptop suggestions based on what's popular on e-commerce websites. The HP 15-ac170tu and Acer Aspire E5-573 are two good laptops available at the 25k mark right now. I recommend picking up the Acer Aspire E5-573 simply because it comes with Linux OS (whereas the HP only offers Free DOS) and some better features like Wi-Fi 802.11ac support.

## Projector for occasional home use

Hi Agent 001, this is Sazid from Hyderabad.

Can you suggest me a good projector under the 10K it's purely for home purpose and will be used rarely. Looking forward for your suggestion.

–Sazid Abdul

Hi Sazid, unfortunately buying a projector requires you to spend a little more money – I know we'd all want it to be so but a projector isn't exactly the same as a low-to-mid ranged smartphone. I would only recommend you to buy a projector that's worth over at least ₹50k at the very



Benq W1070+

least. Try to look for products from Acer, Benq and Dell at that price point. Close to 1 lakh and above is where you see good home entertainment projectors being priced at – Epson, Benq, Panasonic and Casio are brands that have competitively priced projectors to offer here.

## Which phone to buy

Dear Agent, My name is Raghava, and I want to buy a phone at ₹25k price point. I have two phones in my mind – Qiku Q Tera and OnePlus 2. My usage style is that I don't play games, but click a LOT of photos, so the camera should be the best, the music playback should also be nice (I use Sony MDR30ex, and CX180) battery backup should be good (and I won't ask much of that in Android). Its performance should be nice and it shouldn't hang much. Also it should offer good after sales support – very important for me. That's all I have in my mind right now, so help me pick the best. Thank you in advance. And keep it up!

–Raghava

Hi Raghava, Since you mentioned the after sales support, I'd recommend the OnePlus 2 over the Qiku Q Terra. While both the phones would suit your purposes, OnePlus provides better support services in my experience.



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**Industry connect**

We sit down with Badri Sanjeevi of Mauj Mobiles to get an insight into Indian app stores.

**Uber cool service**

Uber to tie-up with Airbus to start on demand helicopter service, now you can ditch traffic like a boss. <http://dgit.in/UberForAir>



It's not just about saving trees anymore, it's about working efficiently than ever before

Jayesh Shinde  
[jayesh.shinde@digit.in](mailto:jayesh.shinde@digit.in)

Regardless of which industry you work in, if you work at an office with more than 10-15 people, the workspace is guaranteed to deal with a lot of paper on a day-to-day basis. There are invoices, agreements, balance sheets, drafts, letters, acknowledgments and other formal diktats that need to be observed and recorded on paper. Isn't this way of functioning a little too dated for all of us in the 21st century? Think of the damage we're wreaking on our ecology to satisfy our paper fetish. Doing away with paper completely from our lives altogether may seem a tough ask, but getting rid of

it well and truly from our office space may not be a pipe dream anymore.

While many of us have lofty ideals like requesting email recipients to not print an email unless absolutely essential, we barely do anything more, which is kind of lame. Here's the thing: achieving a truly paperless office isn't all that difficult. With the help of technology, and some fresh new perspective, you can easily go paperless in the office space. Here's how:

**E-sign**

If you look at day-to-day instances from your life, you'll see that business processes are adapting to digital signatures thick and fast. Courier delivery services now increasingly sport digital signage apps or devices when they deliver e-commerce goods at our doorsteps. Income Tax and other financial documents are also rapidly moving towards deploying electronic signatures. It's high time we

said goodbye to fax or the print-and-scan exercise.

Self sign or get legally binding signatures from authorized remote parties in no time and get started.

Two relatively simple to use apps make signing documents a piece of cake on your Android, iOS smartphones. Download and try out *Adobe Fill & Sign DC* and *Sign Easy*, respectively, and just experience how easy and convenient it is to insert your own hand signature into a PDF or image document. Here at Digit, whenever we have to sign product incoming and outgoing challans (or invoices), external documents mailed across by third parties, or agree to legally binding NDAs (non-disclosure agreements), we generally use one of these signing tools. You can sign PDFs even on your smartphone, believe it or not. Open





## Minecraft for study?

Microsoft to build a customized version of Minecraft to immerse kids into programming and science. <http://dgit.in/SchoolMinecraft>



## Iron Maiden game!

Iron Maiden to bring back their mascot Eddie to life in RPG for iOS and Android. <http://dgit.in/HeavyMetalRPG>

Smart SoHo

the document, enter your signature by literally scrawling your finger across the phone's touch screen, drag and drop it on the exact location where you need your signature to be displayed, stretch it or shrink it appropriately to make it fit, etc. After doing the formalities, the documents can either be emailed or saved to a cloud folder. Just give the process a try. We strongly believe that once you get used to this, you will realize that going paperless isn't all that difficult as you thought it would be.

## Scan, click a photo

If you have to invest in one piece of hardware that will help you go a long way with your paperless office mission then spend on getting a good scanner. Checkout a portable, hand-held scanner (sold by Canon or Portronics) if you absolutely don't want anything that remotely resembles a traditional printer to be visible in your office. Most of them are available around the ₹5k to ₹7k mark.

Alternatively, you can use your smartphone to click photos of documents and save them on the cloud. Checkout CamScanner (<http://www.camscanner.com>) which does more than just take photos through a companion smartphone app as its algorithms are specially sensitive to and adept at recognizing paper document.

When it comes to digitizing paper documents, sometimes you may want to extract the text and make it editable. This is where OCR (optical character recognition) plays a crucial role, and the good news is that there are plenty of apps that provide decent character recognition performance (as long as the scanned document is not hand-written). CamScanner comes with its own OCR feature built-in, but you can also check out apps like ABBYY Mobile OCR (<http://www.abbyy.com/mobile-ocr>) and Text Fairy as they're quite good at extracting editable text from your scanned or photographed image documents.

## Software

The next step in your war against paper should be to look for the right set of software tools to make digital integration of documents not only easy but also feasible. You'd be surprised to know that few of the most popular consumer services out

## BENEFITS OF PAPERLESS OFFICE

There are several tangible, undeniable benefits of implementing a 'zero paper policy' at your office or workplace. For this trend to catch on and become successful, it's important for employees and management to understand that initiating a paperless drive at the workplace is more than just trying to save the environment. It's about setting up a way of functioning that's a lot more practical as technology gets better in our lives.

- **Convenience:** As your dependence on paper diminishes down to zero, you'll find that saving all your documents in digital format really makes them easy to retrieve even when you aren't in office – as long as you're using a cloud-based backup and syncing solution (which you most probably would be).
- **Ease of collaboration:** Another important perk of digitizing documents is its ease of sharing and collaborative work. No need to enclose something in an envelope and send through the post anymore – all it takes is clicking a few buttons and before you know it you can have a team of employees working on a piece of document digitally from within the office premises or remotely even.
- **Security:** It's time to finally say goodbye to all the office cabinets full of ledgers and account books and traditional means to secure the data they hold, because digitizing documents means saving them in a secure online server (by means of a trusted document management system or popular web service, whichever you prefer) with ease of creating multiple backups and redundancies (a process which would cost a lot of time and money if done traditionally over paper).
- **Saves time and money:** Digitizing documents and working in a paperless office environment where every employee's comfortable interacting and interfacing in a virtual, digital ecosystem will definitely help speed up tasks and processes and ultimately save the business decent amount of money, too.

there try and offer a substantial degree of paperless document collaboration and storage than you'd have imagined.

Evernote (<https://evernote.com>), a note-taking app extraordinaire, has features that are perfect to be deployed in a paperless office scenario. It has notebooks (can be digital images, scanned documents, etc), all saved and synced on the cloud, and the ability to share these notes across different Evernote users (hierarchical privileges or access rights for employees). Its smartphone app is great for taking photos of documents and Evernote's OCR feature is one of the best in the business when it comes to scanning and retrieving even hand-written documents unlike any other. If you don't need a full-fledged productivity suite, checking out Evernote as an alternative makes good sense.

Google Drive and Microsoft Office 365 are very good cloud-based productivity suites for your office needs. Not only do they offer a seamless document collaboration experience, their online workflow is very easy to get used to and implement. What's more, they also provide an integrated cloud-based storage option (Drive for Google, One Drive for Microsoft) that

dovetails their respective productivity suites. Most importantly, these services are not as expensive as they once were, say, three or four years ago. Zoho (<https://www.zoho.com>) has similar solutions to offer for customers desiring task-based digitizing and productivity software hosted on the web. All these services offer a "Print to PDF" feature that you need to get used to, if we're going to have any hope of clamping down on paper use.







## Rest in compost

Urban Death Project to transform corpses into useful organic compost, will world embrace it? <http://dgit.in/UrbanProject>



## iLoud Micro Monitors

These portable speakers are akin to studio grade equipments for audiophiles on the go. <http://dgit.in/PortableStudio>

For the accounting and finance team in the office, you can check out an Indian software solution (no, not Tally) that gives them the power to do more without missing paperwork. ProfitBooks (<http://www.profitbooks.net>) offers inventory management and accounting (also payroll handling) at a competitive price.

## Document management systems

All the solutions provided so far are stop-gap and pieced together with the help of two or three different apps or services. This may not be ideal for businesses who need to follow stringent safety and security norms, when it comes to their data. When jumping through hoops may not be ideal, it's time to consider a full-fledged document management systems.

Companies can produce piles of documents (electronically) and if you aren't

(if required) simultaneously. There are various solutions available in the market, here we highlight some of the popular candidates that are worth checking out.


OpenKM (<http://www.openkm.com/en>) is a web-based document management application that uses standards and Open Source technologies. OpenKM provides full document management capabilities including version control and file history, metadata, scanning, workflow, search, and more. OpenKM integrates all essential document management, collaboration and advanced search functionality into one easy to use solution

eFilecabinet (<http://www.efilecabinet.com>) is a dedicated online file management service, allowing you to store, search and share files (even large files) with ease. It offers features to scan and drop digital files and store files in virtually any format, its search and file retrieval is speedy and

invented the PDF file format. Adobe had obviously envisaged the paperless office scenario quite a few years ago and it's trying to bring in its expertise by offering to take care of the document scanning, storing, signing and sharing process every step of the way. Through Adobe Document Cloud (<https://acrobat.adobe.com/in/en>), and the seamless features on offer (albeit at a hefty monthly subscription cost), going paperless isn't all that hard to imagine.

## Change old habits

Old habits die hard. Taking into consideration all the different triggers that resurface years of mental and physical conditioning, it may pose a challenge towards your establishment's objective and make it difficult to realize your collective paperless goals. In such instances, good old low-tech solutions should come to the rescue.

- **Introduce printer woes:** Make using the printer in office a painstaking exercise. If you have a large format printer, immediately swap it for one of the most basic network printers money can buy. Ensure that the printer isn't quick to spew out printed pages, is difficult to operate and is a shared resource among several employees.
- **Bye bye faxes:** If they aren't phased out and dumped into the garbage bin already, then without wasting anymore of your company's time and money fax machines need to be relegated to history books. It's high time. Who uses them anyway? Have people not heard of emails? Come on, already!
- **E-statements:** To set the example, ensure you opt for electronic statements from your banks and credit card company. Pay bills online, too, and reduce your cash / cheque book use down to a minimum.
- **Rewards:** Beyond just gamification – tracking, recognizing and rewarding employees who significantly cut down their dependence on paper on a monthly basis – make sure there are no technology bottlenecks hindering the deployment of your company's paperless policy. With a lot of cloud data being synced to and fro, make sure your office has very good Internet connectivity speeds. 



careful they may be lost or spread across a dozen inboxes, not to mention employee systems and smartphones, making your data vulnerable. In such instances, where you need a central location to house all digital documents, a document management system is essential.

A document management system is different from online storage, as the latter only provides you cloud-based server space to save all your scanned documents and image files. Document management systems (DMS) are designed as an end-to-end solution aiming to deliver much more than what an online storage solution can when it comes to totally eliminating paper from the workplace. Think of DMS as scalable database systems that can be easily searched, shared and managed across several people

accurate, and finally it allows you to share files through email or SecureDrawer (with custom parameters). The solution has smartphone apps to allow easy capture of images as documents.

New Mumbai-based Ksmart Group's latest enterprise business offering is DigiDocs (<http://www.ksmartgroup.com/digidocs.html>), a document management system with OCR feature as well. In fact, DigiDocs claims to be built on Google's Tesseract technology with a Linux core and PHP frontend, offering extensive scalability and customization options depending on client's needs. If you're looking for a home-based solution, this is worth looking into

Finally, no article on paperless office solutions can be complete without a mention to good old Adobe, the company that





## Start-up guide

With Modi encouraging India for start-ups, here's the roadmap for pitching the startup idea in your mind  
<http://dgit.in/StartupGuide>



## Google pays Apple?

Google paid a big chunk of money to Apple, to be the default search engine for iOS.  
<http://dgit.in/PayApple>

Industry Connect



# Third-party app stores are here to stay

We sit down with Co-founder and CEO of Mauj Mobile to learn how their app stores cater to the Indian audience



◀ **Badri Sanjeevi**  
Co-founder and CEO, Mauj Mobile

**Mithun Mohandas**  
[mitbun.mobandas@digit.in](mailto:mitbun.mobandas@digit.in)

**You have 3 properties Mobango, Games Bond and AppyStore. How are your platforms different from existing ones like Amazon's AppStore, SlideME and GetJar?**

**Badri:** To be very honest I don't know if GetJar and SlideME are still alive. GetJar shut down and was sold to a Chinese company, I don't know if they still operate. Haven't seen that in a couple of years now. SlideME also I am not sure, maybe they do operate. I have to understand what that is. Let's step back a little and look at Mauj Mobile. It's a company that operates in two verticals, one is gaming and the other is kid's edutainment. Another objective for us is to offer highly segmented content which have been curated. And the segments that we look at are very large with very large underlying market place. Today, if a user wants content they predominantly go to Google Play and YouTube, and we know that these platforms are pretty inefficient when it comes to offering highly curated content. What I mean by curated is, for example, if you go to AppyStore it will show content only for children below the age of eight. We have done a lot of work with teachers and experts for understanding what are the major developmental areas and milestones for children. You will find that the content is absolutely right for

the child and the parent. If you go to our app in Google Play you will see that the feedback and rating from parents is exactly what we hoped to see. Parents find this as a great resource for their children and they also find that the app engagement is very high because it's solving the problem for the end user. Similarly, on gaming what we are building and hoping to receive the whole 150 million gamers who are in India. We want to provide the gamers with an amazing gaming experience. Not throw at them 200,000 apps that Google Play may have, but throw at them a set of curated apps, across the most popular categories and each game is a good game with levels, depths and proper curation.

**Why make Gamesbond, a new platform for premium games, and why not incorporate premium games into the existing platform - Mobango?**

**Badri:** It is happening already happening in many ways.

**Often there's a certain stigma attached to third-party App stores. I'm not pointing the finger at your app store but there is the general view that third party app stores are where those apps land which don't make the cut on native stores. How do you respond to that?**

**Badri:** No, I think that's not right. In terms of numbers there is no stigma. What I am

saying is if you look at the numbers, we think that three billion game downloads happen in India in a year. And roughly half is delivered by Google Play and the other half is delivered by everything else so there is no stigma. Who are the biggest people in the other half? It's Opera AppStore, UC browsers AppStore and Mobango AppStore which are all alternate app stores. If you go and talk to 10-15 gamers like we do every week with 5-6 gamers, you would find out that people are extremely comfortable going wherever they need to go to discover the content. There is no stigma, they know and understand how to download an APK, and know how to discern a good product from a bad product. So the customer is more sophisticated. So the stigma thing is not right.

For example, could you say at any given time there is stigma in watching a video in HotStar because it's not on YouTube? Or is there stigma in watching something on Spuul or Hungama and not on YouTube. It was never the case, so why is there stigma in an executable file and not on a mpeg video, it is all what we have built up in our minds as analysts. So there was never a stigma in watching a video from wherever, also today people have started watching video on Snapchat and Facebook. So seeing as what Snapchat is based on, I think those are just misconceptions and the numbers don't reflect on what is ascertained to have





## Ping Pong in Space!

Watch this absolutely awesome video of an astronaut playing ping pong with a water ball.  
<http://dgit.in/WaterPingPong>



## You would never checkout!

First fully dedicated hotel for gaming to be opened for gamers. Heaven is for real!  
<http://dgit.in/HotelForGamers>

stigma. If I understand the Indian gamers and Indian parents' mentality, then there might be half a dozen categories that are critically important to make an amazing AppStore or content store. So I just need to work hard on them and we can do very good job on them because we are focussing on those verticals, just like Myntra can do an amazing job in apparels then let's say Amazon may not be to do. It's exactly the same thing we can do like Myntra's job in apparels that horizontals cannot do.

**4 Despite making it easy to accept payments, do Indian customers pay? Because we've been talking to developers for quite a while now and the general consensus about this region is that people want free stuff, and most of the revenue is generated by serving ads. So how do you see a paid platform faring under such circumstances?**

**Badri:** Yes, the Indian customer pays a lot of money. No developer makes much money nonetheless. So today if you look at a typical app, we are not having too many apps on Google Play, but whatever apps we are seeing, the average revenue of per install of Google Play on an average

might realise that they have got about 100 million shoppers with credit cards on file and decide to open up a Google like API where they will make one-step transactions, then we will use Flipkart's API or the payment ecosystem in India will undergo change where credit card transactions below 100 rupees wouldn't need a 2-factor authentication and we could simply start using credit cards and the consumer doesn't have to jump through 3 hoops while shopping. The payment ecosystem is evolving and we will try everything. Today it happens at the operator level within India since we have the largest wallet user base in India with 900 million people having wallets.

**4 How do you make your platform more appealing to developers as well as users?**

**Badri:** Modernization, discovery and distribution. But we aren't only on gaming, try video, for example, let's take one video player and call it Rajshri entertainments. Let's take the example of Rajshri channel for YouTube which is run by Rajat. He is the number 5 YouTuber and number 10 YouTube channel in India. But Rajat doesn't say YouTube is my sole game,

done this for as long as we can remember. Even the JAVA developers of the games till 2011-12 put their content on OVI, GetJar, SlideME and everything else. Because they understood that every channel mattered. And I think that other platforms like ours are just coming to scale now. The reason is our ecosystem is just three years old and you know that the Nokia ecosystem lived for about 25 years. So we are too young and I think it's only a matter of time before developers say, "Today I uploaded on Google Play, and now let's upload on 1,2,3,4 platforms ... that's it. So developers will come to us as long as we create many success stories. And we are working on creating those success stories. I will give an example of those success stories, UCBrowser were one of those amazing success stories and we have spoken about it in our PR releases. We had delivered about 20 million downloads. We have done success stories with game developers called HeroCraft for whom we have delivered 10-15 million downloads. For another video app called VidMate, we had delivered about 5 million downloads.

**4 We heard, you'd started a new initiative at NASSCOM GDC to attract gamers. How is that program coming along?**

**Badri:** We were at the NASSCOM GDC this year working with developers there creating success stories saying, "Hey listen, you can make money from us which is outside of Google Play". And three developers took anywhere from ₹2 lakhs to ₹4 lakhs in the developers' conference. The money is not that much, I am not cutting them a cheque of 2 crores, it's still 2-4 lakhs which they didn't have. This might have been the money they would have made from Google Play or maybe even a little bit less and that's ok. After the launch of GamesBond we made a big splash at GDC (Game Developer Conference), we were all over the place. We gave out 6 awards this year and we sponsored both NASSCOM's and our own awards. So we actually gave out most of the monetization to game developers and that's what we are working on, convincing developers that we are an emerging platform and we are an interesting site that's not to be ignored. **4**

**"And that's what we are working on, convincing developers that we are an emerging platform and we are an interesting site that's not to be ignored."**

game is probably less than 50 cents. So that's why there is a mad race on Google Play to get the most number of downloads, because the revenue on downloads is ridiculously low. 50 cents happens to be on the higher side, when you look at apps with the most number of downloads it's probably around 15 - 10 cents, if they are lucky. So it's terribly bad and on Google Play the payment mechanism has not really worked well, so in fact Google is also doing operator billing, which you know already. So to that extent operator billing is just a wallet and don't think of it more than that. And if tomorrow, Paytm scales we might use Paytm or other service like FreeCharge if they scale. Maybe one day companies like Flipkart

Rajat distributes his content across 150 different stores around the world. So it's actually on the owner of the content to go out there once he's made a piece of content like his videos. The life of a video is incredibly short, maybe a month. And the life of a game is very short, maybe 6 months. But the effort in making the game and getting it out there through distribution channels is pretty dramatic. For example, on Google Play now, you will see five Chhota Bheem games right now on the homepage. Check after 6 months and none of them would be there. So these 6 months are all the developer has. How does he make the most money out of his content? The answer is blindingly obvious. And movies and videos have



**TESTED: Gaming monitors**

We lineup a dozen gaming monitors from four popular display manufacturers to tell you which one deserves to be on your rig

**Bazaar**

All the latest and greatest products tested and reviewed so you make an informed buying decision

**THE UPSTREAM BATTLE**

The battle to be the best video streaming service in India is well BATTLE and truly on. We compare eight services to tell you which one's the best of the bunch.

Prasid Banerjee  
[prasid.banerjee@digit.in](mailto:prasid.banerjee@digit.in)

**T**he video streaming wars are officially underway in India and the usual suspects are all lined up and amidst much talk and fanfare. The entry of Netflix into the market has put other streaming services on guard and while the world renowned service itself isn't perfect, to say that it's got competition in India would be a massive understatement.

You may have heard of apps like Hotstar, Spuul, Wyrk Movies and many others, all of which offer video streaming on demand. They all promise to offer you a seamless streaming experience at HD or more. Unfortunately, the best things in life have never been paid, so alluring as video streaming services may sound, they do cost quite a bit.

We'll discuss the question of Internet speeds and data consumption under a different section later, so let's stick to

the services at the moment. It's an opportune time to compare these services to each other, trying to find out which one offers the most value for your money or performs the best. They can cost as much as ₹650 per month, which is no small price for an average Indian consumer.

The goal of these services is to replace your television and they stem from the fact that a big part of the world population today watches content online, rather than on a televi-

sion screen. Don't get us wrong, TVs aren't going to die out just yet, but the way you watch content on your television may change sooner than you think.

But then again, content is not being streamed on the bigger screens alone, apps like Netflix, Hotstar and others are also available for mobile users. In fact, there are even video streaming apps that are meant only for mobiles. It's all happening and as a consumer, you have a lot to choose from. Well, the following comparison shall help.





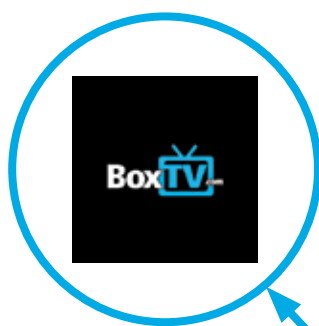
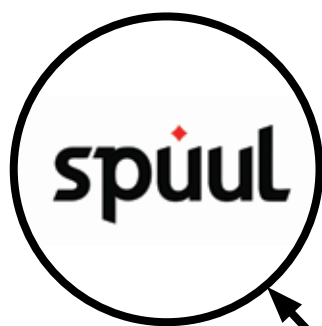
## Browse FB on Tor

Facebook's Android app will soon extend support to Tor browser on Android devices. <http://dgit.in/FBOnTor>



## Taser's new Pulse

If all you want to do is defend yourself, check out this new less lethal weapon — Pulse from Taser. <http://dgit.in/TaserPulse>



## PERFORMANCE

## SPUUL

Price: ₹300 per month  
Overall Score: 72.4 / 100

Being amongst the oldest streaming services in India, Spuul has often been underrated. The app can do quite well and is amongst the best performers in this test.

That said, while the app has the capacity to perform as well as the best out there, but is too dependent on your Internet speed. Yes, most of these apps are, but many do better than Spuul. On a 2Mbps connection, the app refused to ever launch content on HD and always played catch up when it comes to streaming resolution. Spuul will start at SD quality and then play catch up, eventually reaching 720p. In addition, on both desktop and mobile, Spuul will stutter often while seeking.

On a higher 10Mbps fibre connection though, Spuul does much better. Content streams easily and without stutters, sometimes even if you seek through it.

## MAVSHACK

Price: ₹400 per month  
Overall Score: 56.7 / 100

One of the lowest performers in this test, Mavshack left us quite disappointed. It costs ₹400 per month, making it the second most expensive in this test, after Netflix. Sadly though, the performance doesn't justify paying that much at all. Mavshack takes almost 17 seconds to launch movies on desktop, while the time can go up to above 25 seconds when you're using the Android app. In this day and age, that's not acceptable and is the opposite of a seamless streaming experience.

Mavshack doesn't stutter too much, but then again, the video quality is almost always in SD, which is a big problem after paying 400 bucks. Even on the 10Mbps connection, Mavshack wasn't able to consistently play content on HD, which was very disappointing. All in all, Mavshack isn't the one we'd recommend to you. It's not worth the money.

## BOXTV

Price: ₹199 per month  
Overall Score: 58.1 / 100

On the other hand, the lowest performer in our test was BoxTV. We found this one wanting from both streaming and app performance point of views. It can take over six seconds to buffer, when you skip ahead on a movie/show and stutters after that as well. To launch a particular movie or show, BoxTV can take 13 seconds, even on the fastest connection we tried it on, which was a 10Mbps line. It's problems are similar to Mavshack's mentioned above, but BoxTV stutters even more than Mavshack, making it our least favourite.

At ₹199 per month, BoxTV seems to be overpriced and like Mavshack, its performance isn't the only reason we say that. While you can easily binge watch on many of the other streaming services we chose for this test, BoxTV and Mavshack don't really inspire you to do that.

## EROS NOW

Price: ₹99 per month  
Overall Score: 70.3 / 100

If you haven't heard of Eros Now, you should definitely look it up. This one came as quite a surprise to us. While performance isn't its strongest suit, it's not one to be discounted either. On average, Eros Now takes about 8 seconds to launch a movie, while streaming through to various sections of the movie results in about four to five seconds of buffering. The experience is quite seamless and is complemented by the fact that Eros Now has a pretty vast collection of local content, which we'll talk about later.

The best part about Eros Now though is in the fact that the video quality is absolutely top notch. It's at par with Netflix and ahead of both Hotstar and Spuul. While streaming, Eros Now is able to play on high resolutions consistently and with its lowest HD Streaming pack costing only ₹99, it comes out to be a pretty great deal.

Performance = 72.4

Video load time (wired)..... 14.4 sec  
Video load time (mobile)..... 6 sec  
Stutter free performance..... 8.8/10  
CPU usage..... 16.9%  
RAM usage..... 410.8 MB  
Video quality..... 5/10

Performance = 55.7

Video load time (wired)..... 16.8 sec  
Video load time (mobile)..... 28 sec  
Stutter free performance..... 9.6/10  
CPU usage..... 12.3%  
RAM usage..... 403.3 MB  
Video quality..... 5.5/10

Performance = 54.2

Video load time (wired)..... 12.8 sec  
Video load time (mobile)..... 16 sec  
Stutter free performance..... 8.8/10  
CPU usage..... 16.8%  
RAM usage..... 401.8 MB  
Video quality..... 4/10

Performance = 67.6

Video load time (wired)..... 9.4 sec  
Video load time (mobile)..... 6 sec  
Stutter free performance..... 10/10  
CPU usage..... 17.1%  
RAM usage..... 405.1 MB  
Video quality..... 9/10





## Sold in a minute

Ticket to Microsoft's annual developers 'Build' conference sold out in just a minute. <http://dgit.in/MSBuildConf>



## Other side of development

This year CES saw so many new products, but this booth of Green Electronics was unique. <http://dgit.in/CESGreenEC>

## Video Streaming Services



### NETFLIX

Price: ₹650 per month  
Overall Score: 76.2 / 100

From one of the best to the best. In terms of performance, Netflix lives up to its name. Its smart algorithms are the smartest out there and can assure stutter free streaming on most Internet connections. Yes, on the 2Mbps line, Netflix would often start streaming at SD quality, but it maintained HD longer than others and drops the resolution smartly, so as to avoid buffering. Its launch times were also amongst the lowest, launching movies and TV Shows in a wink, while seeking to various sections of the video typically took 3 seconds.

What made Netflix the best performer though was its video quality. The fact that Netflix retains HD quality longer than others is easy to ascertain, but more importantly, it seems that even when content is compressed to fit network speeds, Netflix yearns to deliver the best possible. Truly unique!

**Performance = 76.7**

Video load time (wired).....8.6 sec  
Video load time (mobile).....4 sec  
Stutter free performance.....10/10  
CPU usage.....16.2%  
RAM usage.....438.1 MB  
Video quality.....9.5/10



### BIGFLIX

Price: ₹249 per month  
Overall Score: 58.4 / 100

Bigflix has been in the video-on-demand business much longer than any of the other services.

While the Bigflix desktop version consumes the least system resources and can seek to various locations of a movie in less than 4 seconds, it's mobile app really needs a lot of work as it's severely below par. On phones, the streaming quality is nowhere close to what Bigflix offers on the desktop, which is what leads to its downfall in our performance tests. The video launch times can go up to 25 seconds and the app often just hangs at certain points, leaving you completely clueless. In addition, the stutter free experience is great on its desktop app but needs some work on mobile.

From an overall performance point of view, Bigflix couldn't really make it with the top dogs.

**Performance = 58.3**

Video load time (wired).....11.1 sec  
Video load time (mobile).....22 sec  
Stutter free performance.....10/10  
CPU usage.....13.1%  
RAM usage.....389.9 MB  
Video quality.....5/10



### HOTSTAR

Price: Free  
Overall Score: 72.9 / 100

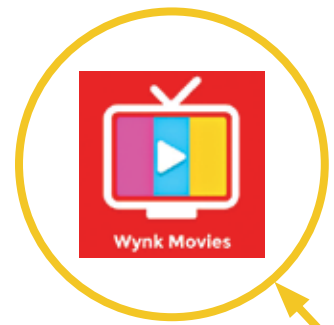
Perhaps the most intriguing of all the services we tested was Hotstar. Star India's streaming app allows you to stream all the content available on it for free. In addition, it's really the only one that followed the television model, meaning that Hotstar also has live television features. It's various tie-ups allow you to watch cricket and other sports on it, along with other content.

In terms of the performance, Hotstar can do almost as well as Netflix and Eros Now, but its focus seems to be primarily towards mobile users. While Hotstar offers a pretty seamless experience on the desktop as well, during the course of our tests, twice we experienced very long waiting times on Hotstar for a considerable period.

On mobile though, Hotstar works really well, with impressive launch speeds of up to 7 seconds, while seeking doesn't result in a lot of stutter.

**Performance = 69.2**

Video load time (wired).....13 sec  
Video load time (mobile).....4.6 sec  
Stutter free performance.....8.8/10  
CPU usage.....13.2%  
RAM usage.....406.7 MB  
Video quality.....8/10



### WYNK MOVIES

Price: ₹38  
Overall Score: 52.1 / 100

Airtel's tie-up with Eros Now, Hooq and Sony LIV resulted in Wynk Movies. While it's a streaming service like any other, Wynk Movies differs in the fact that it's available only for mobile users. It's a somewhat surprising move, but Airtel seems to be betting that its users will be viewing content more on mobile and less on desktop.

As far as the streaming quality goes, Wynk can do quite well. It offers a largely stutter free experience and launch times were long, but not too long. The smart algorithms on the app are also quite good at controlling streaming quality, but not quite as seamless on slower connections.

The fact that there is no desktop version to this service means we can't directly compare it to the others in this test, but if you do happen to watch a lot of content on mobile, this is a good performer for sure.

**Performance = 51.9**

Video load time (wired).....NA  
Video load time (mobile).....9 sec  
Stutter free performance.....6/10  
CPU usage.....NA  
RAM usage.....NA  
Video quality.....7/10





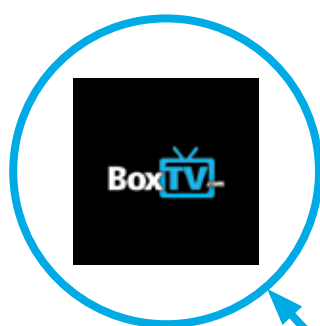
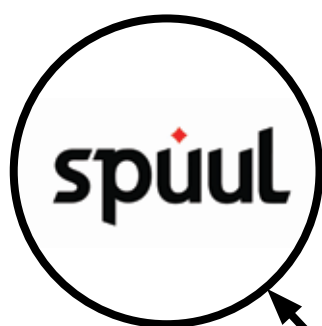
### The new About.me

About.me rolled out its new elegant redesigned interface after planning of over a year. <http://dgit.in/NewAbtMe>



### Intel's new ad

Intel's new ad reminds you of all the devices that have "Intel Inside", but not PCs. <http://dgit.in/IntelInsideall>



## FEATURES AND DESIGN

### SPUUL

From a design and features standpoint, Spuul can take on the best out there. The biggest problem with this service was the serious lack of English content, but when it comes to Hindi and regional content, Spuul is easily amongst the best. As mentioned before, Spuul can stream in 720p, which is more than enough for most screens and has perhaps the best Search function of all these apps.

The app interface is clean with adequate sorting for content, making it easy to find what you want to watch. Spuul lacks suggestions though, depending on the user to choose what he or she wants to watch.

Where it truly loses out though is in the pricing. Subscription to Spuul costs ₹300 per month, with a discount for yearly subscriptions. That said, you can also rent movies from Spuul at ₹60 and it offers a free version as well. Select content can also be downloaded for offline viewing on Spuul.

### MAVSHACK

Remember our disappointment with Mavshack? Well, it continues here as well, and it's not a rosy picture at all. While the interface is colourful, posters for movies, etc. just don't look as good as other apps on Mavshack. In addition, the app stops to load a little too often, which hampers the experience further. While categories are sorted pretty well, it doesn't really do much to overcome other difficulties. It's a frustrating experience overall.

Mavshack though truly loses out when it comes to the amount of content it has. Its collection of free content is nothing compared to Spuul and Eros Now and most TV Shows on Mavshack were things we had never heard of. It tried to put up a front that it has a lot of content in store, but in reality, there's just not enough popular content for you to pay ₹400 for a subscription. It ranks below BoxTV in the features and design segment.

### BOXTV

While most of the problems with Mavshack continue in BoxTV, it beats the former in terms of the mobile app design at least – it's a definitely better experience. The interface on BoxTV is much cleaner and finding content is easier. However, on the desktop, BoxTV autoplays advertisements while you're looking for other content and there are stutters when it's loading content on a new screen.

However, like Mavshack, BoxTV's subscription, worth ₹199, is also unjustified when you consider the fact that there is little popular content on it. Movies are quite old, while TV Shows are almost non-existent. Amongst heavy hitters like Hotstar, Netflix and Eros Now, BoxTV finds itself quite outclassed when it comes to features and design.

Also, the quality of content on BoxTV is a tad better than it is on Mavshack, but not enough to match any other streaming platform in this test.

### EROS NOW

Our best buy for this test, Eros Now excels in the amount of content it has to offer, which is not surprising considering that Eros International is the company backing it. Its collection of Indian content is far better than Netflix's even, and it easily beats both Hotstar and Spuul in terms of the English content that you can watch on it.

The fact that Eros Now offers a free service is even better since the quality of content available for free is worth giving it a try. In addition, at ₹99 per month, it is one of the cheapest streaming services that you can subscribe to today and a clean and easy to learn interface on desktop and mobile means your experience is top notch.

You may not have heard a lot about Eros Now, but we found that your money will be best spent subscribing to this one. Just give this service a try, if you're a Bollywood movies and TV connoisseur.

#### Features = 61.7

Content Search.....	7.5/10
Interface Design.....	7.5/10
<b>CONTENT LIBRARY</b>	
Hollywood.....	7/10
Bollywood.....	8/10
Regional.....	7/10

#### Features = 55.4

Content Search.....	5/10
Interface Design.....	6/10
<b>CONTENT LIBRARY</b>	
Hollywood.....	3/10
Bollywood.....	3/10
Regional.....	8/10

#### Features = 58.3

Content Search.....	5/10
Interface Design.....	5.5/10
<b>CONTENT LIBRARY</b>	
Hollywood.....	3/10
Bollywood.....	3/10
Regional.....	3/10

#### Features = 60.5

Content Search.....	7.5/10
Interface Design.....	8/10
<b>CONTENT LIBRARY</b>	
Hollywood.....	8/10
Bollywood.....	9/10
Regional.....	7/10





## UA's new HealthBox

Under Armour's HealthBox is a collection of digital fitness goodies that's high on software. [digit.in/UAHealthBox](http://digit.in/UAHealthBox)



## What after aluminium?

Rumours about the upcoming iPhone with a new body material have surfaced. <http://digit.in/iAfterAl>

## Video Streaming Services



### NETFLIX

Speaking of the best, Netflix may be our best performer, but in terms of Indian content, the app still needs a lot to do. You could argue that Netflix is not about Indian content, but the fact that its international library is also stunted in India, is a point against the service.

Having said that, Netflix still boasts one of the best applications, both on desktop and mobile. It allows you to search by genre, title, people and so on and the suggestions are better than any other app in its category can boast. In fact, Netflix doesn't want you to search for content, instead depending on what it suggests you watch.

It costs ₹650 per month for the cheapest HD pack, which is steep, but based on your likes and dislikes, Netflix, not surprisingly is worth considering. Netflix also supports 4K streaming, but that seems somewhat far fetched for Indian users and even users abroad right now.

#### Features = 69.1

Content Search.....	7.5/10
Interface Design.....	8.5/10
<b>CONTENT LIBRARY</b>	
Hollywood.....	8/10
Bollywood.....	5/10
Regional.....	5/10



### BIGFLIX

Bigflix app design wasn't something that we enjoyed. To put it bluntly, the Bigflix app doesn't look like something that belongs in this day and age. The images used in the app are low quality and the loading icon appears once too often. The desktop performance is slightly better than the mobile app, but it's still not the best design out there. It's more like walking into a physical store, where you browse things and choose what you want, except that it doesn't work on the Internet.

Also, the app design differs quite a bit between mobile and desktop, making it a steep learning curve on two fronts. For ₹249 per month, we'd want much more. Bigflix seems to be an old school player that is lost against the competition from the new school. It also needs to work on procuring more varied content for users to watch. It's Indian content is nowhere close to Eros Now and Spuul, while English content is poor.

#### Features = 52.4

Content Search.....	5/10
Interface Design.....	5.5/10
<b>CONTENT LIBRARY</b>	
Hollywood.....	4/10
Bollywood.....	4/10
Regional.....	3/10



### HOTSTAR

Star India's streaming service constantly surprised us. The app design is clean, with a swipe action required to move between TV Shows, movies and so on. The best part about Hotstar is watching Live TV on it and its Netflix-like smart algorithms do well in making sure that you get a seamless experience even while watching live television.

Hotstar's emphasis on mobile is apparent, but its desktop application isn't shoddy either. The desktop version is almost a replica of what you get on mobile and content is easy to find. Just some good suggestions and more English content and Hotstar could easily become the best streaming app to go for in India. No, we aren't kidding.

That said, we don't like the fact that the number of ads differ based on what you're watching. One movie may have three ads in the entire length of it, but another may have more. This is because it's free.

#### Features = 73.8

Content Search.....	6.5/10
Interface Design.....	8/10
<b>CONTENT LIBRARY</b>	
Hollywood.....	7/10
Bollywood.....	9/10
Regional.....	5/10



### WYNK MOVIES

The tie-up with Eros Now, Sony LIV and Hooq has given Wynk Movies a pretty good catalog to present to users, but being a mobile only service, we'd expect some more work on its app. While it has an impressive Search feature, integrating a suggestions feature would do well for this app. At first glance, the interface can look a little cluttered, but not unattractive and it needs to take less time to go from one screen to the other.

In addition, while Wynk Movies does have an impressive algorithm working on the backend, it needs to put in more effort on mobile data and performance optimization.

The best part about this app is that the subscriptions go down to as low as ₹5 for a single day, but we'd like more if there was a way to access all its content through one master pack. Airtel users would benefit from special services, but for others, it may turn out to be quite expensive.

#### Features = 50.9

Content Search.....	8/10
Interface Design.....	7/10
<b>CONTENT LIBRARY</b>	
Hollywood.....	6/10
Bollywood.....	6/10
Regional.....	6/10





### Better proximity sensor?

Software from Elliptic Labs plans to replace infrared proximity sensors with ultrasound sensors. <http://dgit.in/UltraSoundPS>



### S Pen issue fixed

Samsung has physically changed the Note 5's internal mechanism to avoid the S Pen issue. <http://dgit.in/SPenFix>

## HOW WE TESTED

To test we chose three different ISPs from Delhi and Mumbai region, running the tests on all of these services. We compared their performance on a Windows PC and Apple MacBook, while on the mobile platform we tested all of their supported Android apps on a One Plus 2.

First, we took into account the obvious things, like the number of movies that each of these services offer, number of advertisements, if at all, that you have to see, the resolution they allow you to stream in, browsers and platforms that they support and whether you can cast them onto other screens. A lot of these apps also go the extra mile suggesting

things that you may like, which is another thing that we took into consideration. In addition, downloading content for offline viewing was of course given extra points.

The fact that all of these services offer mobile apps and run online in the form of web apps, is also something that was taken into consideration. How? We rated the apps, both on mobiles and desktops, based on their design. In the interest of full disclosure, it's important to mention that the design elements were not always rated objectively. The reason for that is how good something looks may change based on who's looking. To counter that, we picked representatives from

our Mumbai and Delhi teams and told them to rate the appearance of these apps. We then took an average of all of these scores.

Other design elements, like Search, System Resources consumed, how content is sorted, number of steps required to play stuff, were easier to rate objectively.

The most important part of this comparison though is the performance. To test this, we started with how much time it takes these services to launch content. To do this, we timed them, playing sub-30 minute videos and over-60 minute long videos, rating them based on the time they take to launch each of these videos. This is

important, since you won't really want to pay for a service that buffers right at the beginning right?

Next, we tried jumping to different parts of the video, timing them for how long it takes them to seek and buffer then. In addition, we also observed whether the content quality stuttered after seeking to a certain point, deducting points based on how often that happened. The same was also done on mobile.

Lastly, the video quality was rated, based on how often the resolution drops, whether the app starts streaming at the highest quality throughout or plays catch up, whether it buffers too often and so on.

## WINNERS

### BEST BUY: Eros Now

Eros International's Eros Now has a healthy collection of movies, TV Shows and regional content and when combined with a pretty seamless streaming experience, is our pick for the best buy award. You can try out the free version to

start with, but having subscribed to every service on this test, we're continuing this one for a while longer. Given Eros Now's consistent, high class performance and its unbeatable library of latest and relevant Indian content, at ₹99 per month for a premium subscription, this is a real steal!

### BEST PERFORMER: Netflix

It wasn't surprising that Netflix lived up to its name, becoming the best performer on our test. It was the only streaming video service which consistently provided HD streams (from the beginning or jumped to a

particular point in the video) without a hitch, unlike almost every other service in the test which almost always started off with a SD quality video catching up to better quality after half a minute. Among its competitors, only Eros Now came close to matching Netflix's video performance.

### EDITOR'S PICK: Hotstar

If on demand video streaming is to replace regular television then Hotstar has the right idea on how to do it. We found this service interesting and worth using and the fact that it's available for free means you could try it with no strings attached, too. Hotstar's live television is its best feature and we hope it is able to get exclusive content to drive viewers in future.



EROS NOW

#### PROS:

- Huge Indian content collection
- Good performance
- Inexpensive

#### CONS:

- Limited Hollywood content
- Sub-stellar mobile performance



NETFLIX

#### PROS:

- Best, consistent HD quality
- Attractive interface
- Exclusive content

#### CONS:

- Expensive
- Entire Netflix US content missing



HOTSTAR

#### PROS:

- Free
- Live TV broadcast
- Very good streaming quality

#### CONS:

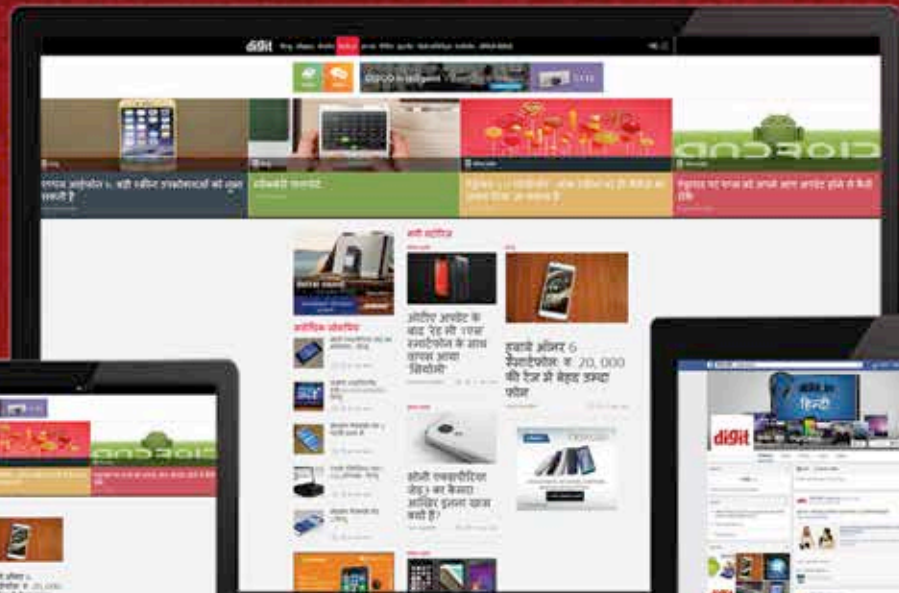
- Limited English content
- Below par desktop performance



# डिजिट अब हिंदी में

देश का सबसे लोकप्रिय और विश्वसनीय टेक्नोलॉजी वेबसाइट डिजिट अब हिंदी में उपलब्ध है। नयी हिंदी वेबसाइट आपको टेक्नोलॉजी से जुड़े हर छोटी बड़ी घटनाओं से अवगत रखेगी। साथ में नए हिंदी वेबसाइट पर आपको डिजिट टेस्ट लैब से विस्तृत गैजेट रिव्यू से लेकर टेक सुझाव मिलेंगे। डिजिट जल्द ही और भी अन्य भारतीय भाषाओं में उपलब्ध होगा।

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डिजिट





### Spotify adding talent

Spotify acquires a pair of companies, says it's to bring like minded teams into the Spotify family.  
<http://digit.in/SpotifyAdds2>

### Mobile phone implant

Scientists believe mobile phone could be implant to your head. Go Total Recall!  
<http://digit.in/MobileHead>

# A DATE WITH DISPLAYS

We test a dozen gaming monitors from Acer, ASUS, BenQ, and LG to tell you which one's best suited for your gaming rig



ASUS M0279Q



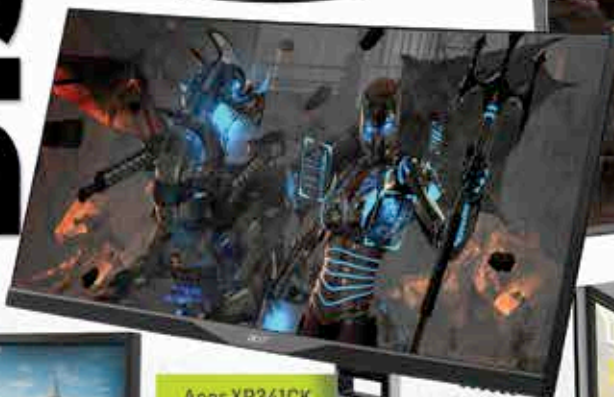
LG 34UM67



Acer X8240H



BenQ XL2720Z



Acer XR341CK



ROG SWIFT PG278Q



BenQ XL2430G



BenQ XR3501





## Affordable at CES

Our favourite stuff from CES that is also affordable and won't burn a hole in your pocket  
<http://dgit.in/AffordableCES>

## Shocking cells

Electrically trained heart muscles from stem cells implant to repair damaged hearts.  
<http://dgit.in/ShockMuscle>

## Gaming Monitors

Ashish Panigrahi &  
Jayesh Shinde  
[readersletters@digit.in](mailto:readersletters@digit.in)

**W**hen contemplating a kickass gaming rig, often the priority given to a graphics card far overshadows everything else – keyboard, mice, headphones, monitor, ergonomic chair, etc. In our haste to gush over the latest and greatest GPU, we mustn't forget that every component is an important piece of the jigsaw which completes your gaming experience puzzle. And picking the right monitor can make or break your visual gaming experience. Especially when monitors are getting more intimately connected to new graphics technologies like NVIDIA G-Sync and AMD FreeSync.

Picking just any monitor off the shelf to satisfy your visual needs may work when you're trying to have something to watch movies on or attend to your non-specialized work needs. Most mainstream monitors are pretty good all-rounders when it comes to being jack of all trades, even encompassing features like USB port extenders, audio speakers, and built-in webcams for those video chat sessions. However, gaming – which often is a performance intensive activity both on the device and user level (you gotta bring your A game to kill enemies and pwn n00bs, don't you?) – needs monitors to have a few specialised skills to ensure they don't drop the ball when you're into the thick of things.

Setting a budget and picking a monitor is one thing, but finding the right monitor tuned to your gaming rig is even more so. If you have an NVIDIA G-Sync compliant GeForce card, does it make sense for

## HOW WE TESTED

**Initial setup:** All monitors to be tested were first examined and everything about them was catalogued, including model number, bundled accessories, available ports, etc. We then reset the displays to factory settings and set brightness, contrast, sharpness at 50%. Depending on the available sync on the monitor two different rigs were set up: one with AMD and the other NVIDIA GPU, respectively. Drivers and essential software were installed. Finally, all performance inhibitors are turned off, as much as possible – stuff like auto screen switching off, auto screen dimming, etc. After this, the monitors are ready to go into the grinder.

**Performance tests:** We conduct a whole series of tests on the devices to measure the impact of every aspect of the monitor settings on overall performance – tests like brightness, contrast at different gamma and OSD settings. It's essential to calibrate all the displays before subjectively testing them. Therefore, these performance tests are done using the DataColor Spyder 4 Elite test unit – a color calibrator. In dark rooms with little or no ambient light, the monitors are tested with DataColor Spyder Studio. Brightness and contrast is tested at different luminance level, and an average of multiple readings is taken as the final score. We also test the screen's black level and white saturation through Lagom.nl. The performance of the sync objectively tested by running various gaming benchmarks like Grand Theft Auto V and Tomb Raider at the highest refresh rate available on the device. For getting more experiential data we ask some players to play these games and rate it on the basis of how good their experience was, which is highly subjective.

A series of subjective testing is also conducted that scores aspects such as a color reproduction while watching movies, screen readability, onboard speakers, look and feel, playing games (if the monitor is meant for gaming), among others. These tests help complete the gamut of objective benchmarks with real-world test

scenarios, allowing us to take a fairly homogeneous look at the monitor's overall pros and cons.

**Performance Scores:** After completing all performance tests the final performance score is arrived at, which includes the weighted sum of all the scores catalogued. Weights are assigned based on the perceived importance of the components.

**Feature score:** The features present in each monitor were tabulated and given weighted scores depending on perceived importance. For example, number of ports on the monitor and screen resolution were given more weightage than panel type. An important note on features, we don't rate sync characteristics any weight because we feel those characteristics already surface in the performance part of our testing.

**Design and Usability:** The scores for this parameter are largely subjective as they indicate our experience with the device. Items such as bezel thickness, viewing angles, etc. are weighted and scored.

**Final score:** The final score that we arrive at is the sum of the performance, features and design scores with a variable individual weightage. This is not a fixed weightage, and depending on the category of monitors we're testing, these weightages can be different. For this particular comparison, we gave performance, features and design 50%, 25% and 25% respectively.

**A note on winners:** The Best Buy monitor is awarded to the device with the best price to performance ratio based on a predetermined formula. This is the ideal, value for money product in the test. The Best Performer award is awarded to the device with the highest overall performance score. The Editor's Pick award is awarded to the device that the reviewer feels is the best product that offers something extra or unique that none of the other monitors have. The Editor's Pick is an entirely subjective award, the decision for which is based on the reviewer's experience while testing the products.

you to go hunting for a G-Sync enabled monitor or not? If you have an AMD FreeSync compliant Radeon GPU, should you just close your eyes and pick a FreeSync enabled display? These technologies are the latest kids on the block, working towards upping your gaming experience.

Apart from this you need a monitor with optimum refresh rate and sync support to render

the in-game frame differences. Believe it or not, the difference between a good monitor and a great monitor is very much visible. Remember playing GTA V, NFS, Battlefield 4 or Just Cause 3? Whenever there was a high speed chase or a building collapsing near your character, you might have noticed frame-lagging, chopping or tearing. These anomalies are efficiently dealt with monitors that have

higher refresh rates and display sync. So a gaming monitor is justified for gaming, on which having sync is an added bonus. But before we start delving into the pros and cons of our tested models let's list all the feature and design aspects you should consider when looking for a gaming monitor:

**1. Ports and interfaces:** Having many ports and interfaces for connectivity is never a





## Garage band update

Garage band app for iOS gets updated with electronic genres, now just tap to drop the bass.  
<http://dgit.in/ElectronicUpdate>

## Plane cheaper than car?

Yeah right this is a plane that costs less than some luxury SUVs in the market.  
<http://dgit.in/IconA5plane>



	BELOW ₹50,000							
Brand	BenQ	BenQ	Acer	BenQ	BenQ	BenQ	BenQ	
Model	RL2455HM	RL2755B	XB240H	XL2430T	XL2720Z	XL2420G	XL2730Z	
Price	₹14,500	₹25,000	₹27,999	₹32,000	₹37,500	₹45,000	₹50,000	
Performance (of 50)	32.77	35.7	38.06	36.95	33.47	35.89	37.46	
Features (of 25)	10.11	10.21	11.67	14.48	16.78	12.61	15.78	
Build and Design (of 25)	11.86	11.59	13.83	16.34	15.41	18.24	16.42	
Overall (of 100)	54.74	57.5	63.56	67.77	65.66	66.74	69.65	
FEATURES								
Screen Size (inches)	24	27	24	24	27	24	27	
Screen Resolution (pixels)	1920 X 1080	1920 X 1080	1920 X 1080	1920 X 1080	1920 X 1080	1920 X 1080	2560 X 1080	
Weight(lbs)	5.7	7.5	6.5	6.8	7.5	6.1	7.5	
Panel Type	TN	TN	TN	TN	TN	TN	TN	
Overlays	Timer	Timer	Crosshair   Timer   FPS Counter	Timer	Timer   FPS Counter	Timer	Timer	
Sync type	No Sync	No Sync	G-Sync	No Sync	No Sync	G-Sync	FreeSync	
3D support	NA	NA	Yes	NA	Yes	Yes	NA	
Display Port	NA	NA	1	1	1	1	1	
Mini Display Port	NA	NA	NA	1	NA	NA	1	
HDMI out	2	2	NA	2	2	1	2	
D-Sub	1	1	NA	1	1	NA	1	
DVI-D	1	1	NA	1	1	1	1	
Earphone In	1	1	NA	1	1	1	1	
AUX in	1	1	NA	1	NA	NA	NA	
Microphone In	NA	NA	NA	1	NA	NA	2	
No. of USB	NA	NA	NA	2	4	2	2	
Response Time	1 ms	1 ms	1 ms	1 ms	1 ms	1 ms	1 ms	
OSD controls?	Buttons	Buttons	Buttons	Buttons   Controller	Buttons   Controller	Buttons   Controller	Buttons   Controller	
PERFORMANCE								
Gamut AdobeRGB	75	76	77	77	75	56	78	
Avg Brightness (0,25,50,75,100)	152.18 cd/m <sup>2</sup>	190.76 cd/m <sup>2</sup>	149.38 cd/m <sup>2</sup>	102.28 cd/m <sup>2</sup>	155.32 cd/m <sup>2</sup>	145.38 cd/m <sup>2</sup>	167.92 cd/m <sup>2</sup>	
Contrast Ratio (25,50,75,100)	650	635	447.5	350	440	435	537.5	
Audio	5	7.5	7.5	5	7.5	7	8	
Tomb Raider	5	5	6.17	5	5	6.5	7.25	
GTA V	5	5	6	5	5	7.5	7	
BUILD AND DESIGN								
Available display adjustments	Tilt	Tilt	Pivot   Tilt   Swivel   Height	Pivot   Tilt   Swivel   Height	Pivot   Tilt   Swivel   Height	Pivot   Tilt   Swivel   Height	Pivot   Tilt   Swivel   Height	
Display tilt (up/down) (in degrees)	15/5	15/5	35/5	20/5	20/5	20/5	20/5	
Viewing angles (H/V) (in degrees)	170/160	170/160	170/160	170/160	170/160	170/160	170/160	
Bezel Thickness (in mm)	2.1	2	1.6	1.7	2	2	1.8	
Wall Mounting	Yes	Yes	NA	NA	Yes	Yes	NA	

bad thing. You never know what port you would require, so it's good to have options.

**2. OSD controls:** On-screen display (OSD) controls are generally buttons. But recently companies are experimenting

with joysticks, touch buttons, controllers and so on. Buttons are good to have, as controllers and joysticks may have a single point of failure which may be inconvenient if they tend to go belly up.

**3. Display adjustments:** An adjustable display is always desirable, but if it does have pivot along with swivel, tilt and height adjustments, then it's a welcomed addition. Greater manoeuvrability's always good.

**4. Wall mounts:** Wall mounting is more preferable for larger displays rather than the smaller ones because it helps reduce strain on your eyes as well as back. Large screen monitors over 27-inches in size can





## Laceless soccer boot?

Adidas introduces laceless soccer shoes for better fit and ball control.  
<http://dgit.in/LacelessAdidas>



## CES in photos

Check out the best pictures of CES 2016 that include the best of the gadgets on display  
<http://dgit.in/CESinPics>

## Gaming Monitors



### ABOVE ₹50,000

LG	ASUS	ASUS	BenQ	Acer
34UM67	MG279Q	PG278Q	XR3501	XR341CK
₹62,500	₹63,350	₹66,750	₹70,000	₹89,999
36.06	40.95	38.85	34.87	39.95
11.21	12.65	13.59	9.44	13.15
14.84	17.45	18.28	10.53	15.57
62.11	71.05	70.71	54.84	68.67
34	27	27	35	34
2560 X 1080	2560 X 1440	2560 X 1440	2560 X 1080	3440 X 1440
7.3	7.3	7	11.1	10
IPS	IPS	TN	AMVA	IPS
Timer   FPS Counter	Crosshair   Timer	Crosshair   Timer   FPS Counter	Timer	NA
FreeSync	FreeSync	G-Sync	No Sync	Adaptive Sync
NA	NA	Yes	NA	NA
1	1	1	1	2
NA	1	1	1	1
1	2	NA	2	2
NA	NA	NA	NA	NA
1	NA	NA	NA	NA
1	NA	NA	1	1
1	NA	NA	1	NA
NA	NA	NA	NA	NA
NA	1	2	NA	4
5 ms	4 ms	1 ms	4 ms	4 ms
Joystick	Buttons   Joystick	Buttons   Joystick	Buttons	Buttons
79	80	79	81	79
97.42 cd/m <sup>2</sup>	103.2 cd/m <sup>2</sup>	136.4 cd/m <sup>2</sup>	173.7 cd/m <sup>2</sup>	194.2 cd/m <sup>2</sup>
305	402.5	405	305	647.5
9.5	9	9	9.5	10
4.5	8.17	6.67	5	6.33
5.5	8.17	6.83	5	6
NA	Pivot   Tilt   Swivel   Height	Pivot   Tilt   Swivel   Height	Tilt   Height	Tilt   Height
NA	20/5	20/5	15/5	35/5
178/160	178/178	170/160	178/178	178/178
1.3	1.2	0.6	1.5	1.2
Yes	Yes	Yes	NA	NA

Now that we've told you what to look for while considering a gaming monitor, let's take a closer look at all the dozen gaming monitors that we've tested and compared in this story. We divided the monitors into two obvious price-based categories: six monitors under ₹50k and six monitors between ₹50k to ₹1 lakh. Let's take a closer look at what both the camps had to offer.

### BELOW ₹50K BenQ RL Series

This BenQ monitor series caters to the budget gamer's needs, consisting of monitors that tries to offer a good overall performance and feature set without upsetting your bank balance by a whole lot. For the purpose of our comparison, we got two models: RL2755HM & RL2455HM, with screen sizes of 27-inch and 24-inch, respectively. The design of the two monitors is quite similar and the build quality is respectable.

We also quickly realized that the most inexpensive monitor in the entire comparison (not just this subcategory), the BenQ RL2455HM, proved to have the highest contrast ratio reading recorded on our Datacolor Spyder test among not only the displays in its category but across all the monitors in this comparison test. Not only that, it also registered the second highest brightness reading after the Acer XR341CK. For a monitor selling at ₹15k, this is clearly an impressive feat by the unsuspecting Benq monitor, and for this reason alone the BenQ RL2455HM is a must buy.

One of the obvious omissions across both the entry-level BenQ RL series gaming monitors was the lack of G-Sync or FreeSync technology – understandably so, as these are still premium features found only on

higher priced gaming monitors. Another thing these two gaming monitors are missing is onboard audio – at least some audio is better than no audio. This has no direct impact on gaming performance, but certainly the experience is hampered to some extent – yes, we know that no self-respecting gamer would settle for audio projected from tinny monitor speakers but don't forget this monitor is aimed at cash-strapped customers. The overall gameplay and benchmarking experience on both these entry-level Benq monitors showed sporadic frame drops



BenQ RL2455HM

and tearing in graphic intensive games, especially GTA V. However, at their selling price, we really can't ask anything more both these Benq monitors, especially from the 24-inch BenQ RL2455HM which is actually a diamond in the rough due to its synthetic performance results.

### BenQ XL Series

BenQ XL gaming series has two variants: 24-inch and 27-inch priced under ₹50k. The 24-inch models are XL2430T & XL2420G while the 27-inch model is XL2720Z. The XL2420G is G-Sync enabled, as long as it's paired with a compatible NVIDIA GPU.

get a bit too close for comfort, especially if you're viewing it from a close distance (like on your desktop). With wall mounting, there's a way out.

**5. Sync:** Always a plus to have a monitor sync supported

by your GPU. What's even better is if the sync technology is specific to your current GPU to further amplify its performance effect – like G-Sync and FreeSync from NVIDIA and AMD, respectively. It works!





## Bing's new logo

Bing has updated its logo by capitalising the "b" and changing its colour to green, to show more commitment to search <http://dgit.in/NewBingLogo>



## Music Memo and more

Apple's focusing on sound, launched Music memos — it lets musicians record and share ideas! <http://dgit.in/iMusicMemo>

## UNDERSTANDING DISPLAY SYNC

V-Sync wasn't good enough when it came to dealing with screen tearing and dropping frame rates in graphics intensive games for a long time. It was only a matter of time until the rise of other advanced sync services like G-Sync, V-Sync and Adaptive Sync. All sync forces the video display to adapt to the rendering frame rate of source rather than, source adapting to display refresh rate. Makes total sense, doesn't it? Good.

### FreeSync Vs. G-Sync

G-Sync is a sync standard introduced by NVIDIA for its GPUs while FreeSync is the AMD counterpart. FreeSync to some extent was created on the same framework and architecture as VESA Adaptive Sync, but the basic difference between these is the

DisplayPort protocol. While Adaptive Sync used to require eDP 1.2a support, FreeSync worked fine with DP 1.2. But now all the displays come with eDP 1.2a protocol, so no issues as earlier.

FreeSync is free to use, open source with no legal penance and with a dynamic refresh rate of 9-240 Hz. G-Sync is more on the proprietary side with its own LCD scaler, otherwise known as field-programmable gate array (or FPGA) which raises the display's cost. AMD on the other hand tied up with known LCD scaler manufacturers to maintain its royalty-free status. Both these methods of sync make a noticeable difference to frame rate quality, we've noticed. In this test itself, we saw monitors with G-Sync and FreeSync were a cut above the rest in terms of overall gaming performance.

The build quality of the BenQ XL series of monitors is pretty good, nothing to complain. The thing that attracted us the most would be separate controllers for OSD controls on all the XL series units, which seems to be exclusive to these monitors.

In terms of performance, highlights, we must say that the BenQ XL2430T excelled over all the rest of the monitors in two key areas – it had the highest white point value, with respect to its gamut, in our Datacolor Spyder test and it also had the highest white saturation value on Lagom.nl LCD's benchmark. It is yet another shining star and a feather in the cap of BenQ.

### Acer XB240H

The XB240H supports G-Sync, which was not so good compared to the BenQ XL2420G – the Acer monitor scored 12 out of 20, while the BenQ XL2420G scored 14, which is a difference of 10%. Also with maximum brightness of 269.3 nits only and just the Display Port (DP) for connectivity it didn't really win any performance or feature related honors in this comparison review. Nothing horribly wrong with this monitor, it's just an average performer.

### ABOVE ₹50K BenQ XL2730Z, XR3501

The XL2730Z is the higher priced of the BenQ XL series siblings, selling exactly at the ₹50k mark. It is FreeSync enabled meaning it will support sync with a compatible AMD GPU. Skipping this monitor's features and design highlights, we would talk directly about its performance prowess. This monitor is amongst the highest performers as far as all our synthetic benchmarks are concerned – Spyder, Lagom.nl LCD test, not to mention PixPerAn and other audio-

video tests. What's more, in the FreeSync - GSync test parameters, this monitor outperforms all other GSync monitors and finishes second best in terms of gaming performance, trailing the ASUS MG279Q by a very narrow margin. It's a very good purchase at the price, one that we're only glad to recommend.

The BenQ XR3501, on the other hand, is the heaviest of all monitors. It sports a 35-inch screen. Huge would be an understatement, this monitor is quite intimidating to work on a day-to-day basis from a close range, purely because of its size. It has an AMVA panel as opposed to the mainstream TN or IPS panels, which is a good thing considering AMVA panels provide better black levels – the XR3501's black levels are the second best amongst all monitors tested in this comparison test. In terms of build quality, the height adjustment feature was sorely missed on this monitor. But comparing it to its competitors from Acer and ASUS, it would've benefited with built-in audio and height adjustment feature given the fact that it's such a huge display in size.

## LG

If you are not a big fan of curved displays, but want to have a ultrawide resolution supported panel then you might want to consider LG 34UM67. But let us warn you that the display is so wide that it literally hurts to look from one end to another. It is also one of the only two displays sporting an IPS panel in this comparison. It comes with a customizable joystick at its bottom screen bezel, useful to switch through all its onscreen menu items. While some of the monitors also had joystick OSD controllers, they were not as customizable as the LG's. But, the thing which we missed the most was the unavailability of display adjustments, especially height customization – an important feature in such a large panel. On the performance front, the LG FreeSync enabled monitor trailed the Acer and ASUS on core gaming performance, but it shined through some of the other multimedia video tests we conducted through our benchmarks and tests.

### Acer XR341CK

The Acer XR341CK is a 34-inch huge curved display with the highest brightness of 340.4 nits & supports VESA Adaptive Sync and AMD FreeSync. This was the first monitor we unboxed in the test centre when



BenQ XL2730Z



Acer XR341CK





## Google Cardvoice?

Google cardboard software and the unity game engine now supports spatial audio. Yay! <http://dgit.in/GCWithAudio>



## Be secure, always

There might be hundreds of IMs out there, but here are the most secure ones that provide end to end encryption <http://dgit.in/SecureIMs>

## Gaming Monitors

we started receiving units for this comparison test, and for a monitor it had some pretty loud audio output, too. The monitor is extremely well-built and supports a variety of orientation customization features. The LED lights at the bottom of its screen bezel gives it a space-age look and aids visibility of non-backlit keyboard keys even in near complete darkness.

Overall, this monitor just trailed the ASUS MG279Q performance chops by a whisker. If you need an impressive, wide-screen monitor with a curved panel and 3440x1440 pixel resolution, look no further.

## ASUS

ASUS' Republic Of Gamers products are always good but this time we found out that



ASUS-MG279Q

the non-ROG MG279Q to be slightly better than the ROG Swift PG278Q, in terms of performance. Whether it was watching movies or playing games, everything was a gorgeous experience on the ASUS MG279Q which sports an IPS

panel through and through with very good colour gamut levels in our Spyder tests. On the other hand, in terms of ergonomics and design, we found that the bezel of the ROG Swift PG278Q was the thinnest out of the bunch and it really helped in projecting a cool chic look. The ROG Swift PG278Q was G-Sync enabled and narrowly trailed the slightly better performing MG279Q with FreeSync onboard. Gaming on both the ASUS monitors was great fun and we hardly experienced any screen defects or performance anomalies.

## VERDICT

For its overall impressive performance, the ASUS MG279Q won the Best Performer Award, and the ASUS ROG Swift PG278Q

gave it a very good run for its money, finishing up almost equal in terms of score. But MG279Q was the best overall in terms of gaming experience and even all-around entertainment experience. A deserved winner in our books.

In the 'Under ₹50k' segment the BenQ RL2455HM is a very good deal at its price, edging out the BenQ RL2755B by winning the price war and the Best Buy Award. In the 'Above ₹50k' segment BenQ XL2730Z was the winner of Best Buy Award owing to its FreeSync and synthetic performances, offered at an attractive price.

The Acer XR341CK won our Editor's Pick Award for offering better audio performance, AdaptiveSync (FreeSync) and larger screen size.

## SOMETHING EXCITING THIS WAY COMES

*The Digit e-mag app is in the pre-beta phase.*

Yes we know, we know it's been long overdue. But now that we're making some progress we're inviting our most diehard fans to join the pre-beta programme.

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INSIDER PROGRAMME



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and sign up for your exclusive invite



# Bazaar

## THE LATEST PRODUCTS REVIEWED FOR YOU

The Digit Test Centre receives hundreds of products every month. Each of these products is put through a series of tests and is finally given a score. The final score is arrived at after considering a number of factors and evaluating them in terms of features, performance, value for money, build quality, and, in the case of software, even ease of use.

For better understanding of our ratings, here's a quick guide to our overall score

-  **Extremely poor product.**  
Keep away!
-  **Strictly OK.**  
Not recommended
-  **Decent product.**  
Go for it, but there may be better products out there.
-  **Very good product.**  
Highly recommended.
-  **Ground-breaking product.**  
We've never seen anything like it before.  
A definite must buy!

Page 94 ▶  
HTC One A9



◀ Page 95  
Apple iPad Pro



Page 96 ▶  
LeEco Le 1s



▲ Page 99  
Acer Aspire  
Switch 10E



▲ Page 100  
Brainwavz Delta



▲ Page 101  
Creative Sound  
Blaster FRee



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INTO LIFE!





## Gorilla Glass windshield

Ford and Corning invented new hybrid glass made out of Gorilla Glass which is lighter and thinner.  
<http://digit.in/GGonCars>

## Hoverboards banned in US

US colleges ban hoverboard in campus due to increased number fire hazards caused lithium ion batteries  
<http://digit.in/Hoverboardban>

Bazaar

# Canon PowerShot G9X

An essential pocket companion



**T**he Canon PowerShot G9X is incredibly compact, even beating the Sony RX100 IV by 0.4 inches in terms of its thinness. However, you get a small lens (10.2-30.8mm), and you will quite often find yourself missing a bigger zoom on the lens. Nevertheless, the 1-inch sensor is quite impressive, and daylight imaging is excellent. The PowerShot G9X renders crisp, true-to-source colours, keeping contrast and shadow levels intact.

Canon, however, had to leave out a number of things from this camera to make it so compact. The scroll wheel is semi-functional, and is fit around the lens. There is an absence of the eyepiece viewfinder, too. Coupled with that, the PowerShot G9X has a smaller, 10.2-30.6mm lens in comparison to the PowerShot G7X. The viewfinder is non-tiltable, going against popular trend.

While these seem to be a number of significant compromises, the Canon PowerShot G9X is still a delightful shooter, reminding you of the reason why Sony's RX100 series became so popular in the first place.

In terms of build quality, the Canon PowerShot G9X is very well-built, with seamless edges put together in a well-designed and well-placed creases. The front face houses an AF assist beam, the lens with the toggle ring around it (yet another well-thought improvisation by Canon, although there are limitations here), and asymmetric rubber inlays on both flanks. There are chrome-finished hoops on both ends for you to attach wrist suspenders to the camera. The right side houses the microUSB and HDMI ports concealed within a flap, while the left edge has the mobile connect button, which allows your camera to sync to your smartphone via Wi-Fi (a delightful experience — read Connectivity for details). The top shelf houses the concealed flash, album button, power button, microphone, zoom toggle, shutter release and the standard mode dial. A slim strip of the top shelf is bent inwards to the rear end, housing the flash release switch and the album and power symbols.

Another aspect where the PowerShot G9X does not perform too well is opening its aperture up to f/11. Another factor is the Image Stabilisation, which is slightly unpredictable. While it often stabilises images perfectly at shutter speeds of 1/20", there are times when it failed to do the same, even at 1/40",



Price  
₹30,330

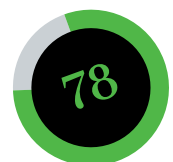
which is the standard average ideal shutter speed for shooting images. IS difficulties do not occur regularly, but are recurrent, and hence end up affecting imaging performance.

Video recording fidelity is good, although nothing exceptional. Clarity of video is good, thanks to the very good sensor, and the DIGIC 6 processor keeps operations fast.

The autofocus mechanism is also very fast and accurate, and the excellent touchscreen aids subject tracking and touch focussing. Auto-WB adjustment is good and almost always gives you what you would manually adjust to. The Auto mode, however, often overexposes if you are shooting in bright daylight. The PowerShot G9X does not have the best dynamic range, though, and this slightly affects low light, dusk and silhouette photography. 1080p movie recording is hassle-free and decent, although its major reliance on touch input can get annoying. Given its compact size, you may try getting adjusted to the camera.

The Canon PowerShot G9X is a neat, well-designed, compact camera, with a large 1-inch sensor, a very fast image processor, responsive touchscreen, pleasant interface and an overall excellent proposition. Its limited ISO performance and slightly compromised dynamic range are certain factors that may affect its performance, but only at specific times. It is a highly competent and recommendable camera, for a price of ₹30,000. You may spend about ₹6,000 more and go for the PowerShot G7X if you are looking for a bigger lens and a swivelling screen.

Souvik Das



Performance..... 84  
Features ..... 78  
Design ..... 86  
Value ..... 65

## Specifications

**Image Processor:** DIGIC 6; **Sensor:** 1-inch type, 20.2 megapixels; **Lens:** 10.2-30.6mm (3x zoom), 35mm equivalent; **Image Stabilisation:** Lens-shift type; **Live viewfinder:** 3-inch TFT LCD, ISO: 125-12800; **Shutter Speed:** 30"-1/2000", f/number: f/2.0-f/4.9; **Weight:** 209g; **Continuous Shooting:** Approx. 6 shots/sec.

## Contact

**Canon India Pvt Ltd**  
**Phone:** 1800-180-3366  
**Email:** <http://www.canon.co.in/personal/web/contact>  
**URL:** [www.canon.co.in](http://www.canon.co.in)





### Bragi Dash

Bragi's wireless earbuds provide more than average earbuds with fitness tracking as well  
<http://dgit.in/TheDashBragi>



### Netflix on wheels!

Volvo developing intelligent streaming device for autonomous car.  
<http://dgit.in/Vstreamcar>

# Acer Aspire E15 E5-574G-77RN

The ugly duckling



Price  
₹66,500

Acer's E5 series has held a tradition of average looks and a decent build. These laptops generally perform well and come with a decent build and on first glance, it seems, that is not going to change with the new Acer E5-574G. For this particular model, Acer has gone for a coarser brushed metal feel. We found the build quality of the Acer E5-574G to be satisfactory but there is

scope for improvement considering the price point.

The full island type keyboard is quite standard. The keys are evenly spaced and the key depression is short but the keys have clear pressure points. The large touchpad, is smooth and responsive and offers an integrated clickpad as well. There is enough room on the trackpad to use gesture controls. As for the display, it is quite reflective. Using the display outdoors under sunlight isn't ideal.

The laptop is powered by a 6th gen Intel Core i7 6500U processor, the laptop can handle all tasks with ease. There is 8GB of DDR3 RAM on board which is sufficient for multitasking as well as gaming. The laptop has the NVIDIA GeForce 940M graphics card with 4GB GDDR3 memory. It is not the best when it comes to high-end gaming but if you want to play casual games, it won't disappoint. It might not be a good looking laptop and does not have a 1080p display, but its utilitarian approach towards performance will make it an ideal choice for many.

Hardik Singh



Features .....	59
Performance.....	69
Design .....	51

### Specifications

**Processor:** Intel Core-i7 6500U; **GPU:** Nvidia GeForce 940M 4GB; **RAM:** 8GB; **Internal Storage:** 2TB HDD; **Display:** 15.6-inch 768p; **Keyboard:** Island type; **OS:** Windows 10; **I/O:** 2 x USB 3.0, 1 x USB 2.0, 1 x HDMI, 1 x VGA, SD card reader, 1 x Headphone/mic

### Contact

**Acer India**  
**Phone:** 1800116677  
**Email:** ail.nbeasycare@acer.com  
**Web:** <http://www.acer.com/ac/en/IN/content/service-contact>

# HTC One A9

A tale of love and hate



HTC's Android iPhone, the One A9 is one of the first phones running Android Marshmallow out of the box and despite its lower pricing, is much better than the company's current flagship devices.

It runs on a Snapdragon 617 SoC and is arguably one of the smoothest performers in the market today. While gaming performance isn't the best, the HTC One A9 can handle regular apps and multitasking without any hitches.

The 5 inch AMOLED panel is one of the most balanced displays out there. The display is not oversaturated like Samsung's Super AMOLEDs but warm enough for many to like.

The One A9's fingerprint sensor lies on the front and is much easier to work with than



Price  
₹29,990

many others. It's not as fast as Nexus Imprint, but it's faster than Touch ID on iPhones. In addition, the audio quality on the device is better than its competitors, but the difference will be evident only to those using high end headphones. The 2,150 mAh battery can last for about the whole day.

The only complaint with the A9 remains the camera and pricing. The 13MP camera on the back works better than previous HTC phones, but it still doesn't match up to industry standards. The camera takes a while to open and can take satisfactory images when light conditions are good, but not as good as phones like the OnePlus 2, Yu Yutopia and Honor 7. On the other hand, the Rs. 29,990 pricing is very high compared to the OnePlus 2 and company, which makes this phone difficult to recommend, despite the fact that it feels very good to use.

Prasid Banerjee



Features .....	79
Design .....	86
Performance.....	76
Value .....	54

### Specifications

**Display:** 5 inch FHD AMOLED; **Processor:** 1.5 GHz Snapdragon 617 octa-core; **RAM:** 3GB; **Storage:** 32GB; **Operating System:** Android 6.0 Marshmallow; **Camera:** 13MP rear, 4MP ultrapixel front; **Battery:** 2150 mAh

### Contact

**HTC India**  
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**Email:** [htc.com/in/contact/chat/](mailto:htc.com/in/contact/chat/)  
**Website:** <http://www.htc.com/in/support/>





## Jabra launches Halo Fusion

Jabra's stylish Halo Fusion headset provides on-the-go music as well as calling abilities and can connect 2 devices simultaneously. <http://dgit.in/JHaloFusion>

## Augmented sound

SubPack M2 converts audible frequencies to frequencies which human body can feel. <http://dgit.in/SubPackM2>

**Bazaar**

# Apple iPad Pro

An Apple product that isn't for the masses

**T**he build of the iPad Pro is top notch. The tablet has a 12.9-inch display, and a form factor that screams iPad on steroids. This isn't a bad thing if you are using the tablet as a drawing tablet or doing any task that requires such a large display. Browsing websites is a great experience as you get the full desktop version of a page on the iPad Pro. But, when it comes to simple tasks like, reading a book, etc., it seems really big and unwieldy. The tablet has four speakers – two on top and two at the bottom when held in portrait mode, and the audio is really loud. Whether you watch videos on YouTube, Netflix or any other app, the audio delivery from the device is great. The same can be said for the screen, too. With a pixel density of 264 ppi, it is a gorgeous display. The display has great viewing angles and good visibility under direct sunlight, too.

Moving to the performance, the iPad Pro is a beast. Split-screen multitasking works very smoothly. Not all the apps support split-screen view perfectly though, and this is one area where the tablet has great potential to grow. If you are watching a video posted on a website, you can pull it out and the video will play in a small window on the tablet display. You can reposition this video on the tablet and have any two apps running on the tablet, and the entire experience feels seamless. This feature is present on a number of Android smartphones and tablets for quite some time now. However, the split-screen playback or the pull out playback isn't there for YouTube and that is disappointing.

Moving to the keyboard accessory (sold separately), the story is a little different. The Smart Keyboard can be best described as a keyboard panel being attached to the iPad's Smart cover. It takes time to get used to positioning it, or attaching it. One good thing about the keyboard is that it doesn't have a battery, and doesn't need to be charged. It draws battery from the tablet and connects via Bluetooth, and there is no setup process required. The Smart Keyboard also snaps on to the tablet magnetically, and the attachment of the keyboard with the main body is quite assuring. Unlike some other tablet-laptop hybrids, which have an adjustable hinge, there is only one position at which you can rest the iPad Pro on the Smart Keyboard, and this is a big disadvantage. If you are sitting in a café and there is too much sunlight glare on the display, you can't adjust the tilt. You



will have to change your own position, or improvise on viewing angles.

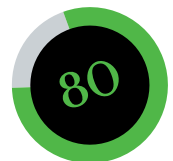
Another disadvantage of the iPad Pro is that it feels more like a tablet than a hybrid, and this is more because of the OS. There are only so many things you can do when multitasking on iOS. Sure, you can press Command+Tab to switch between apps, but the convenience of this feature is better exploited on Windows and OS X, when compared to the iOS experience. It also seems like a majority of the apps are designed for use on the iPad Air 2. As a result, there is a lot of unused space on the screen (when using Google Docs, for example), and it feels like you are using a mobile version of these apps on the iPad Pro.

When it comes to gaming, this tablet is a beast. You can play any game off the App Store on the tablet, and it will run perfectly. Though there is enough screen space for controls, the tablet is uncomfortable to hold for long sessions of gaming.

Apple Pencil (also sold separately), works way better in tandem with iPad Pro than what we have seen on the Samsung Galaxy Note 5 with Samsung's S-Pen. If you are an artist who wants to draw on a tablet, don't need to look beyond the iPad Pro.

Overall, Apple's iPad Pro isn't for everyone. The device has very specific uses, and is targeted for those who will exploit the potential of the large display and the power under the hood. If you are looking for a tablet for content consumption like reading books, watching movies, playing games and more then the iPad Air 2 is a great option. If you are looking for a near-PC like experience on a hybrid device you are better off looking elsewhere.

*Sameer Mitha*



Features.....	83
Performance.....	91
Design.....	94
Value.....	50

## Specifications

**Display:** 12.9-inch LED-backlit IPS LCD display; **Resolution:** 2048 x 2732 pixels; **CPU:** Apple A9X Dual-core 2.26 GHz (Twister); **RAM:** 4GB; **Storage:** 128GB built-in. Not expandable; **Camera:** 8MP rear and 1.2MP front; **Battery:** 10,307 mAh battery; **Weight:** 723 gm; **Thickness:** 6.9mm

## Contact

**Apple India**  
**Phone:** 1800-100-9009  
**Web:** [www.apple.com/in](http://www.apple.com/in)





## Youtube alternative

Watchable is the newest contender of Youtube.

<http://dgit.in/whatchable>



## Disgruntled fans

200k angry Apple fans signed a petition to save the headphone from rumoured iPhone 7.

<http://dgit.in/SaveJack>

# Altec Lansing Lifejacket 2

Bigger, better, more expensive



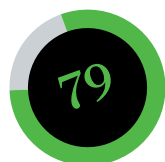
**T**he Altec Lansing Lifejacket 2 is literally a bigger sibling of the Mini Lifejacket 2. It is bigger in size and battery life, can work as a power bank, and instead of the two 1.5" Neodymium drivers in the Mini Lifejacket 2, the Lifejacket 2 is powered by two 2" Neodymium drivers, along with a passive bass radiator for enhanced low frequency performance.

Price  
₹12,600

As a result, what you get is louder, clearer and more balanced audio. The highs are clear, distinct and slightly favoured. Mid frequencies are prominent, and the basslines of tracks sound powerful. It preserves much of the details of a track, which you will distinctly notice while playing tracks like Opeth's Deliverance. However, the slight bias towards the highs lead to a slight pinch in the audio, and there is a lack of warmth that is not pronounced, yet is noticeable. The audio distorts slightly at 100% volume, which is not something you might wish to pay for.

The Altec Lansing Lifejacket 2 remains connected for an impressive 30-35 feet amidst furniture space, and can also survive for about 11 hours of music playback and charge an iPhone 5s from 0-100% twice. Adding to this is its tank-like build that seems to survive whatever torture you expose it to, and the Lifejacket 2 ranks as one of the most ideal outdoor speaker for audio enthusiasts. The one regret? It's not the Altec Lansing we once knew.

Souvik Das



Performance.....	82
Features .....	86
Design .....	74
Value .....	68

## Specifications

**Dimensions:** 3.125" x 7.5" x 2.825";  
**Durability:** IP67-rated, Waterproof, Dustproof, Shockproof, Sandproof, Snowproof; **Weight:** 907 grams;  
**Sound:** DSP-enhanced; **Drivers:** Dual 2" Neodymium + Passive Bass Radiator; **Connectivity Range:** 33 feet; **Battery:** Li-ion, upto 16 hours.

## Contact

**Altec Lansing India**  
**Phone:** 1-855-292-4087  
**Email:** [altec Lansing.com/in/](mailto:altec Lansing.com/in/)  
**URL:** <http://www.altec Lansing.com/al-products/lifejacket-2/>

# LeEco Le 1s

Disrupting the disrupted



**T**he Le 1s smartphone may be the first truly disruptive smartphone since the Xiaomi Mi3. The phone brings top of the line performance to the budget segment along with a full metal unibody design and even a fingerprint sensor.

From a performance point of view, the Le 1s does very well with regular day to day usage and while gaming performance isn't the best, it's definitely up there. If you're looking for an inexpensive but powerful device, then the Le 1s is the right phone to go for.

The 13MP camera on the back on the other hand is good, but not great. While it is really fast, images do lack details and are often quite subdued. It's pretty much standard in this price segment today.

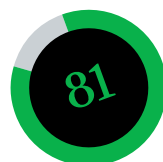


Price  
₹10,999

The display and battery are also pretty good. While the display is a little dim, colours are well balanced and things look good. The battery on the other hand, can last you a full day on regular usage.

The LeEco Le 1s smartphone is the best in its price range right now, despite the fact that LeTV's ecosystem elements haven't been brought into play in India. The company has promised multiple times that it'll bring its complete ecosystem to the country, including devices and content, so the Le 1s may get even better as time passes. For now, you can buy this phone for what it is and your money will be well spent. If you're asking brand value and services, that's something only time can tell.

Prasid Banerjee



Features.....	80
Performance.....	82
Design .....	84
Value .....	75

## Specifications

**Display:** 5.5 inch FHD; **RAM:** 3GB;  
**Operating System:** Android 5.0.2 Lollipop; **Storage:** 32GB; **Battery:** 3000 mAh; **Camera:** 13MP rear, 5MP front

## Contact

**LeEco India**  
**Phone:** NA  
**Email:** [info@le.com](mailto:info@le.com)  
**Website:** [www.leeco.com](http://www.leeco.com)





## Walls don't matter

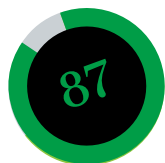
This new WiFi standards will penerate walls with less power.  
<http://dgit.in/WiFi11ah>



## Saving JFK

Watch the trailer of J.J Abrams and Stephen Kings produced series 11.22.63.  
<http://dgit.in/SaveJFK>

Bazaar



# HP Envy 13-d014tu

## Macbook outside, Windows inside

Features .....	58
Performance.....	82
Value .....	86
Design.....	54

### Specifications

**Processor:** Intel Core-i7 6500U; **GPU:** Intel HD 520; **RAM:** 8GB; **Internal Storage:** 256GB M.2 SSD; **Display:** 13.3-inch 1080p; **Keyboard:** Chiclet type (backlit); **OS:** Windows 10; **I/O:** 3 x USB 3.0, 1 x HDMI, SD card reader, 1 x Headphone/mic jack combo

### Contact

**HP India Pvt Ltd**  
**Phone:** 1-(800)-180-1810  
**Email:** [hpestore.in@hp.com](mailto:hpestore.in@hp.com)  
**Web:** <http://www.hpshopping.in>

If you are out in the market to buy a powerful ultrabook, and Windows is the operating system of choice, there are only a handful of options available. There is the very dashing Dell XPS 13 and then there's this — the HP Envy 13.

While Dell has taken a fairly new approach to design and more importantly the display, HP has kept the design rather simple, offering a look, very similar to the Apple Macbook Air. The ultrabook features all the necessary ports and the left side USB 3.0 port is always powered and can be used as an external battery pack for other devices, even when the laptop is in sleep mode.

The Envy 13 comes with a 1080p matte display and offers good viewing angles. The compact chiclet type keyboard offers a decent typing experience. The layout and key spacing is good



Price  
₹83,990

enough but the key travel is shorter than we expected. It isn't bad, but it could have been better and more ergonomic.

The HP Envy 13 is powered by an Intel Core i7 processor, coupled with 8GB of RAM, the laptop churns out a good performance.

The processor is fast enough to handle almost anything you might want to throw at it. Battery life is also good on the laptop. Once, charged, the HP Envy 13 is able to last for about 8-9 hours on normal loads such as browsing or Microsoft Office. Overall, the HP Envy 13 is definitely a very good laptop to buy if you're looking for great form and speedy performance.

Hardik Singh

# OnePlus Icons

## Premium design, lacklustre audio



The OnePlus Icons is a well-designed pair of earphones. The shimmering silver metal bases of the earbuds has understated chrome inlays, and the two bars leading to the earbuds are sized asymmetrically, lending to the overall aesthetics. The connecting wire is tangle-free. The 3.5mm connector jack is not angled, and you may find the protrusion somewhat annoying, particularly when you keep your phone in your pocket. The earbuds fit nicely, and it is light too, which makes it quite comfortable to wear.

Speaking about audio performance, the OnePlus Icons has an impedance of 32Ω – towards the higher threshold for mobile-oriented in-ears. It is powered by a pair of dynamic, 11mm audio drivers, delivering Sound Pressure Level (SPL) of



Price  
₹3,310

110dB. It has a Total Harmonic Distortion (THD) rating of >0.5%, which is somewhat standard for earphones within this budget. The highs are too sharp, bass is very low and mids are highly sacrificed, leading to a lopsided auditory experience. Overall soundstaging is decent, although the audio timbre is very mediocre. There is distortion of audio, meaning that you cannot really use the loudness of the OnePlus Icons all the time.

Overall, for a price of ₹3,000, the OnePlus Icons are not the best pair of earphones to buy. You have the likes of Audio Technica CKX9 to pick up within this budget, and apart from its reasonably decent looks, the Icons really do not pose much to be recommended.

Souvik Das

Performance.....	66
Features .....	62
Design .....	92
Value .....	43

### Specifications

**Driver unit:** 11mm, Dynamic; **Cable Length:** 1.25m; **Sound Pressure Level (SPL):** 110±2dB; **Connector:** 3.5mm, straight; **Rated power:** 5mW; **Frequency Range:** 20-20000Hz; **Total Harmonic Distortion:** <0.5%(1000Hz, 1mW); **Impedance:** 32 Ω; **Wire Core:** Enamelled Copper

### Contact

**One Plus**  
**Phone:** 1800-102-8411  
**Email:** [support.in@oneplus.net](mailto:support.in@oneplus.net)  
**URL:** [oneplus.net/icons](http://oneplus.net/icons)





## Drunk Neil deGrasse Tyson

Neil deGrasse Tyson and Jason Silva talking about death, this is pure gold.  
<http://dgit.in/DrunkwithAwe>



## Jedi Awakens

Gas powered lightsaber brings Jedi's lightsaber to reality, sort of.  
<http://dgit.in/gaslightsaber>

# Digisol 4G Mi-Fi Portable Broadband Router

Credit card sized convenience

**W**ith high-speed mobile internet achieving greater penetration by the day, a mobile Wi-Fi or Mi-Fi router definitely turns out to be a good investment. Digisol's 4G Mi-Fi Portable router comes with quite a lot of features to enable you to continue working on the go. The device itself is quite small, barely bigger than a visiting card. Half of the top surface has a nice glossy window with a 0.9-inch OLED screen embedded in it. The screen is a nice addition since it allows you to quickly troubleshoot the device should anything go wrong without having to go through the painful process of logging into the built-in UI. An added benefit is that this



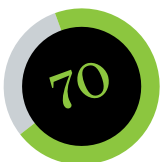
Price  
₹7,999

unit features two micro-RF connectors on the top. So if you ever experience poor signal coverage, you can always hook it up with an external antenna. If only Digisol sold micro RF antennae as accessories.

Another good thing is the built-in battery backup, the 2800 mAh battery is akin to what most flagship phones provide so the router is likely to remain alive for the entire duration of a smartphone charge cycle so you don't have to worry about recharging your router before your phone runs out of charge. Given its wide range of frequency support, it should work seamlessly with Idea, Vodafone and Airtel (in certain circles). All it lacks is support for 2300 MHz and 2600 MHz frequency. If these had been present, the Mi-Fi router would've easily been supported across all TSPs (Telecom Service Provider) in India.

The DG-HR1070MS is quite a feature rich router with support for LTE on most mobile service providers. The built-in battery pack and OLED screen add to its utility value and ease of use.

Mithun Mobandas



Performance.....65  
 Features .....75

## Specifications

**Model:** DG-HR1070MS; **Wi-Fi:** 802.11n; **FDD:** B3/TDD: B40; **WCDMA:** 2100 MHz; **GSM:** 900/1800 MHz; **WPS support:** Yes; **Battery:** 2800 mAh Li-ion; **MicroSD slot support:** 32 GB; **Dimensions:** 109 x 66 x 14.1 mm; **Weight:** 316.2 gm; **Warranty:** Product lifetime.

## Contact

**Smartlink Networking Systems Ltd.**  
**Phone:** 022-3061-6666  
**Email:** [helpdesk@digisol.com](mailto:helpdesk@digisol.com)  
**Website:** [www.smartlink.co.in](http://www.smartlink.co.in)

# Seagate Backup Plus Portable 4 TB

More space than you'll need

**P**ortable hard drives have hit their data transfer caps since quite some time. The only respite one can get when it comes to performance is when there's a hybrid SSD included in the setup or if there's an internal RAID. So hard drives tend to differentiate between each other by offering more in terms of features. The Seagate Backup Plus Portable differentiates itself by providing a massive amount of storage to start with. Four terabytes of data for ₹13,575 works out to roughly ₹3.64 per GB which is quite economical given that most 1 TB portable drives offer about ₹5 per GB. So opting for high density drives makes sense for getting your money's worth. But one could argue that high density drives aren't that reliable. That isn't the case with 4 TB drives since



Price  
₹13,575

this level of technology has matured quite well. If that wasn't enough, you can always look towards the 200 GB of cloud storage that comes with this drive and the Lyve media management application is a nice touch as well.

Performance wise the drive is average as is the case with every portable drive. We saw peak sequential read speeds of around 135 MBps and write speeds of around 128 MBps. Random data from real world tests painted a slightly different picture with write speeds dropping way below other drives and we ran the same tests multiple times to confirm the same. Build quality is average as well, however, the sleek modern design helps quite a bit. Overall, the drive is a great buy given the beefy goodies that come along.

Performance wise and Build quality wise, the Seagate Backup Plus Portable is average, however, the sleek modern design makes it quite appealing.

Mithun Mobandas



Performance.....55  
 Features .....85

## Specifications

**Model:** STDR4000300; **Capacity:** 4 TB; **Interface:** USB 3.0; **Colour:** Matte Black; **RPM:** 5400; **Dimensions:** 114.5 x 78 x 20.5 mm; **Weight:** 246 gm; **Warranty:** 3 Years

## Contact

**Fortune Marketing**  
**Phone:** 011-26414468,  
**Email:** [sales@fortune-it.com](mailto:sales@fortune-it.com)  
**Website:** [www.seagate.com](http://www.seagate.com)





## Sync and play louder

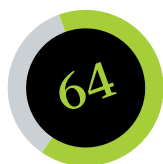
AmpMe creates multi-speaker setup using your phone.  
<http://dgit.in/AmpMesync>



## Extra Juice

Griffin introduces key chain power bank for Apple Watch  
<http://dgit.in/keychnpower>

Bazaar



Performance.....	56
Features .....	63
Build Design .....	52
Value .....	83

### Specifications

**Screen:** 10.1 inch touchscreen, 1280x800 res;  
**CPU:** 1.33 GHz Intel Atom Z3735F; **OS:** Windows 8.1;  
**RAM:** 2GB; **GPU:** Intel HD;  
**Connectivity:** 1xUSB 3.0, mini HDMI, Bluetooth, Wi-Fi 802.11n, micro SD card slot;  
**Storage:** 1TB; **Webcam:** Yes;  
**Weight:** 1.28 kg

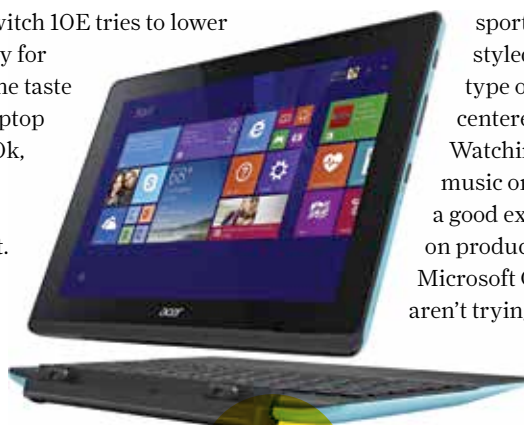
### Contact

**Acer India Pvt Ltd**  
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# Acer Aspire Switch 10E

A well-rounded budget hybrid

**T**he Acer Aspire Switch 10E tries to lower the barrier of entry for anyone desiring the taste of a 2-in1 tablet-laptop hybrid significantly. At `30k, it offers a 10-inch netbook with a detachable screen with enhanced touch input. While the device's screen and bottom panel are encased in a textured blue plastic case that feels nice to touch and hold, the device itself seems bulky and thick – negating the effect created by its brightly coloured shell. However, the Switch 10E isn't heavy, weighing only 1.28 kg. Its screen locking mechanism is nice as the two pieces just slide into the magnetic latches easily – piece of cake, really. The device operates well in tablet mode, no complaints. Its keyboard



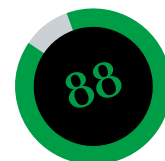
Price  
₹29,999

sports tightly placed chiclet-styled keys that are good to type on and a smooth trackpad centered on an adequate palmrest. Watching video and listening to music on the Switch 10E was largely a good experience, as well as working on productivity apps (Google Drive, Microsoft Office 365). As long as you aren't trying to do more than 2-3 tasks at a time, you'll be largely satisfied with the Switch 10E's multitasking capabilities. Its most stellar performance however is its battery life, scoring just a shade under the 6 hour mark in our high performance benchmark. Expect over 8-9 hours of battery backup in the real-world. This hybrid doesn't try to do much, offering a good 2-in-1 device at a nice price.

Jayesh Shinde

# Dell Precision 5510

Premium grade mobile workstation



**D**ell's Precision 5510 is a high-powered mobile workstation with a Xeon server-grade processor and NVIDIA Quadro professional graphics. The notebook has an aluminium brushed metallic finish that looks as well as feels premium with just the Dell logo on it. Pretty chic and sturdy, premium through and through with a high quality metallic finish. The 15-inch laptop despite sporting a metal body body doesn't weigh a lot at 1.7 kg and is quite light to carry around, which is impressive given the notebook's hardware.

The display of this laptop is one of the key highlights, sporting a 4K resolution i.e. 3840 x 2160 with 10 point multitouch. It has wide viewing angles, good colour reproduction, high contrast

ratio, 100% sRGB and Adobe RGB colour gamut that makes it outstanding. Great for video and multimedia, audio isn't too bad either – it's loud and clear up to the 80% level.

The Precision 5510's HD webcam is placed awkwardly near its screen hinge, but it works well. The backlit keyboard has island style chiclet keys, which is good to type on. Its trackpad has a plain matte texture which provides good feedback.

This machine isn't for the average consumer, meant for professional, hardware-intensive tasks like 3D simulation, modelling, raw video editing and animation tasks. It's not

an ideal gaming machine, but meant for specific industry tasks. If you can afford it, we highly recommend it.

Nikhil Punjabi



Price  
₹2,30,000

Performance.....	89
Features .....	91
Build Design .....	87
Value .....	80

### Specifications

**CPU:** Intel Core Xeon E3-1505M v5 Quad Core Xeon 2.80GHz;  
**OS:** Windows 10 Pro (64-bit); **Memory:** 16GB; **GPU:** NVIDIA Quadro M1000M with 2GB GDDR5; **Ports:** 1xThunderbolt 3, 2xUSB 3.0 with PowerShare, 1xHDMI, 1xHeadphone and microphone combo jack, SD Card Reader; **Storage:** 256GB SSD

### Contact

**Dell India Pvt Ltd**  
**Phone:** 1800 425 4002  
**Web:** [www.dell.com/in](http://www.dell.com/in)



## Assassins Creed Egypt

Ubisoft to set the next installment of Assassins Creed story in Egypt. Get used to sand dunes and mirage. <http://dgit.in/ACinEgypt>

## Apple Acquires AI company

Apple Acquires Emotient a start up that uses AI to read emotions. Now Siri can even condole you in hard times. <http://dgit.in/AIemotions>

# Live SB 2444HD TV

Tiny budget performer



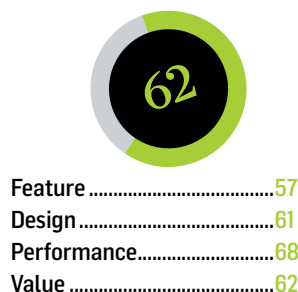
The Live TV is a 24-inch TV which is not only sleek and tiny but quite light on the pocket, sporting an LED display and TN panel. The front of the television is pretty clean, except the Live logo. The TV's menu buttons and connectivity ports are behind the display panel – except the Yipper ports. On casual use, we found the display of the

Live TV to be just too glossy and reflective.

The screen's brightness is 190.4 nits when set at 50% which is good. The television is very light and picture quality is pretty good at 50% brightness. But the problem arises when we increase the brightness above the 50% threshold. The screen was covered with a translucent whitish layer when we tested it at 75% brightness. The display resolution is 1366x768 which means you can turn it into a monitor if you connect it to your PC. Its onboard speakers are loud, but the quality of sound isn't good enough.

The settings menu was identical to any other low cost television available in the market. The thing that irritated us the most was the positioning of the connectivity ports inside a groove facing downwards behind the panel. But considering all the features and performance on offer at just ₹12,990 this is worth considering at the budget segment despite its shortcomings.

Ashish Panigrahi



## Specifications

**Model:** SB-2444HD; **Display:** 24-inches (61cm); **Resolution:** 1366x768; **Connectivity:** 1x USB, 1x HDMI, 1x PC Audio In, 1x VGA, 1x Yipper Cable, 1x Video Input, 1x Earphone In, 1x TV Antenna In

## Contact

**Just Buy Live Enterprise Pvt. Ltd.**  
**Phone:** 1800-2660289  
**Email:** [livetv@justbuylive.com](mailto:livetv@justbuylive.com)  
**Website:** [justbuylive.com](http://justbuylive.com)

# Brainwavz Delta

Great option for the budget buyer

With the recent launch of the Brainwavz Delta, we have a very strong contender for the best value spot within the budget segment. So far, depending on the price point requested by readers writing in seeking suggestions, this coveted distinction would usually go to the lower priced Cowon EM1 or the slightly higher segment Cowon EK2. The Brainwavz Delta is here to bring balance to the force.

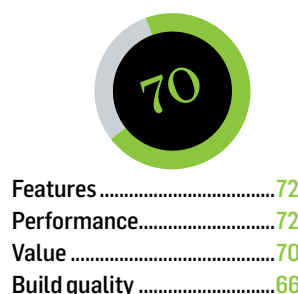
Let's see what it brings to the table. The build quality is slightly lower than the EK2. You don't get the tangle free cable and the housing too, although made of metal, seems ever so slightly more delicate. However unlike the EK2 (or even the EM1) you get a huge sturdy hardcase with the Delta. This hardcase will certainly go a long way towards compensating for any build



quality issues and making the Delta last that much longer. The Delta also has a three button inline control pod.

On our performance tests, when switching between the Delta and the EK2 we noticed that the EK2 is more sensitive and therefore produces higher decibel levels at the same gain level on your source. The bass performance is slightly better than the EK2. It's a little tighter and more impactful. At the same time it should be mentioned that these are not bass oriented headphones. More emphasis is on the highs. The lower mids are a little less represented though.

The Brainwavz Delta is officially priced at ₹1,599. However they hardly ever sell at that price on Amazon. Since launch we've noticed the price is often ₹990 on Amazon. The bottomline is that the Delta is a perfect substitute for the Cowon EK2.



## Specifications

**Driver size:** 8 mm; **Rated Impedance:** 16 Ω; **Frequency Range:** 20 Hz ~ 20 kHz; **Sensitivity:** 100 dB at 1 mW; **Rated Input Power:** 20 mW; **Cable:** 1.3m; **Warranty:** 2 Years

## Contact

**Website:** [www.brainwavzaudio.com](http://www.brainwavzaudio.com)  
**Distributor:** Swordstreet Technology Systems  
**Availability:** Amazon, Flipkart

Siddharth Parwatay





**Ricky and Morty Game**  
Wubba Lubba Dub Dub \*burrrp\* 'Rick and Morty' mobile game to be released soon by Adult Swim. <http://dgit.in/RandMgame>



**Privacy in jeopardy**  
Nvidia GPU apparently resurrecting images from last opened tabs. Watching porn in incognito mode won't help either. <http://dgit.in/NvidiaGPUbug>

**Bazaar**



# Lenovo Thinkpad X250

## Ultraportable workstation ready to join office

**Feature** ..... 59  
**Design** ..... 66  
**Performance** ..... 64  
**Value** ..... 58

### Specifications

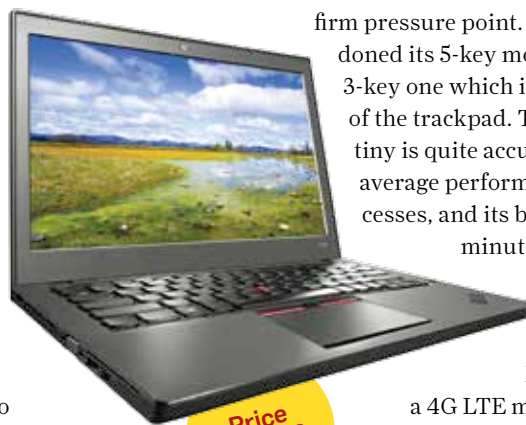
**Display:** 12.5-inch, **Weight:** 1.4 kg; **CPU:** Intel Core i5-5200U; **RAM:** 4 GB DDR3 (1333MHz); **Connectivity:** Wi-Fi 802.11 a/b/g/n/ac, Bluetooth 4.0, 2x USB 3.0, 1x mini DisplayPort, 1x VGA port, 1x SIM slot, 1x Gigabit-LAN; **Storage:** 1TB SATA HDD (5200rpm); **OS:** 64-bit Windows 7 Professional

### Contact

**Lenovo India Pvt.Ltd**  
**Phone:** 1800-419-4666  
**Email:** Commercialts@lenovo.com  
**Website:** www.lenovo.com/in

The Thinkpad X250 is part of Lenovo's popular Thinkpad X200 series of business notebooks, nay, business ultrabooks. It continues to sport a boxy, squared-off design that hasn't changed since the inception of X200 lineup. Not one for flashy looks, the ThinkPad X250 continues to have great build quality, as always, thanks largely to its carbon fiber chassis.

Its display has a maximum brightness of 172 nits and a matte finish. And it is mounted on a drop-down hinge, which lets the display open up to 180 degrees like the Thinkpad X1 Carbon. The keyboard is a chiclet-style spill proof one just like X240, with good travel and a



**Price**  
**₹82,620**

firm pressure point. Lenovo has at last abandoned its 5-key mouse pad in exchange of a 3-key one which is placed at the upper half of the trackpad. The mousepad although tiny is quite accurate. The X250 is an average performer, good for business processes, and its battery lasted 3 hours 12 minutes in our benchmark test – expect about 4-5 hours of real-life backup.

This Thinkpad X250 has accommodated a 4G LTE module too for added productivity on the go. Considering these features we deem the Thinkpad X250 as a worthy successor to the X240 and if you are inclining towards a well-rounded business machine with high portability and neat build quality, then consider getting your hands on the Lenovo Thinkpad X250.

*Ashish Panigrahi*

# Creative Sound Blaster FRee

Loud, but no Roar

After the success of the almost ubiquitous Flip portable speakers from JBL, the cylindrical design seems to have caught the fancy of most manufacturers. The UB Boom followed suit back in 2013 and now we have Creative's own take on this design language – the Sound Blaster FRee. It's a sturdy cylindrical speaker which can be played and kept horizontally or vertically, thanks to its design. It's certainly not a bad looking speaker with its shiny red accents on both ends and metallic grille.

A couple of things in favour of the Creative Sound Blaster FRee are like microSD playback and a three LED battery level indicator. The aforementioned microSD slot is nicely sealed under a rubber flap. The speaker is splash proof and comes with an ingress protection rating of IPX4 (protection against splashes from all

sides). Where it lacks is at things like NFC pairing and USB charging. Since you're lugging around a big battery you might as well have the option to draw some power out to charge your phones right?

What about performance? It features dual radiators that work well enough to increase the overall amount of bass outputted but

the bass isn't tight or particularly low. Let's just say it's voluminous if nothing else. We compared it to the UE Boom and it's easy to notice that the Boom is more clear and accurate. Then again it's

almost twice as expensive. But is it twice as good then? Not really. We'd say the FRee is a louder, more bassier variant of the original Flip.

If you are looking for something all weather and want an option that's different from the JBL Pulse variants, this is the speaker to consider.

*Nikhil Punjabi*



**Price**  
**₹7,999**



**Features** ..... 70  
**Performance** ..... 70  
**Build** ..... 80  
**Value** ..... 75

### Specifications

**Dimensions:** 2.78 x 7.9 x 2.7 inches; **Weight:** 0.4kg; **Battery:** Li 2200 mAh; **Rated battery life:** 10 hours; **Bluetooth Profiles:** A2DP, AVRCP, HFP, HSP

### Contact

**Creative**  
**Phone:** 912-242460777 / 022-67114444  
**Email:** thomas@ecreativeindia.com  
**Website:** <http://asia.creative.com/>





# 5G: The Internet of the Future

The race for 10 Gbps speeds is the next big step towards the evolution of 5G. So, before the internet of the future arrives, let us delve deeper into what it entails.



mous vehicles. 5G is also supposed to be a new chapter in security and a likely nurturer of big and small scale industries, which are likely to mushroom as we move towards a utopian, connected future.

## But first, a history lesson on the “G”

To understand how mobile wireless technology works, we need to dive into the genesis of the technology. We need to get into the past of the technology, we need to understand why today's technology won't be enough to sustain the outgrowing demand of data and why 5G could be the solution which may enable us to be more connected and the world to be more automated. This will also help us understand why 5G is a much bigger deal than the existing 3G and 4G networks.

## 1G

Let's start with 1G, the true first generation of mobile networks or wireless systems, which enabled consumers to connect with each other on a global level. Before this, there was IMTS (Improved mobile telephone service), which was severely expensive and extremely limited. A whole IMTS unit was as big as a briefcase and required a separate large antenna, plugged to a power source to place calls. This analogue technology evolved into 1G or AMPS (Advanced Mobile Phone System), which came into existence in the late 1980s. This carved the cornerstone for mobile telephony, reducing the briefcase size telephone to a handheld device. However, it had its set of problems. 1G had low capacity, poor voice links and no security. Voice calls were

**Hardik Singh**

*hardik.singh@digit.in*

**A**s India progresses towards a pan India 4G network rollout, the research behind the fifth generation of cellular broadband technology is rapidly moving towards completion, called 5G at its current state. 5G simply stands for 'fifth generation', and it's the upcoming standard of mobile communications which suggests that it will revolutionise how we interact with technology, moreover how technology interacts with us. So, what is 5G? Well, to be exact, it is not defined yet. It is rather, a very complex topic at the moment, since the properties and ingredi-

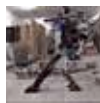
ents of the technology are still under consideration. However, currently, industry experts have chalked out some of its goals in the early stages of the conceptualisation of this upcoming technology. According to various organizations and research teams working on 5G, it will take at least another half a decade to become a global standard. 5G is supposed to bring lower latency, better and wider connectivity and best of all, super speeds of up to 10 Gbps. This is just the tip of the 5G iceberg as it is being conceptualised to be way bigger than the current 4G standard. It will not only help internet penetration in remote areas, but if the required goals are met, it will be an essential part of mission critical industries such as medicine and autono-





## Word Flow on iOS

Microsoft is bringing its excellent Windows phone keyboard to iOS  
<http://dgit.in/iWinKeybd>



## Here's Atlas

Forget iRobot Roomba and Samsung's POWERbot, this is what a robot cleaning your house might look like. Or maybe not.  
<http://dgit.in/RoboAtlas>

From the labs

played back in radio towers and anyone with a radio scanner in the vicinity of the phone signal was able to eavesdrop.

### Fact

*Bell Labs developed the AMPS or 1G standard and Motorola came out with the device to support it. This became the first commercially available mobile phone, the DynaTAC 8000X.*



## 2G

To overcome the problems of 1G, a new standard 2G or GSM (Global Systems for Mobile communications) was introduced in 1991. Offering digitally encrypted phone calls, this standard was more secure and efficient than its predecessors, hence it was adopted world-wide. A few years later in 1995, SMS services were integrated within the technology which made it an even better standard. With 2G, phones became much smaller, battery efficiency was improved and voice clarity was better. But the times were changing and the internet was at the cusp of booming. Sadly, 2G with its 64Kbps theoretical speed of data transfer was not up for the task. This was the main hurdle in the research and development of the third generation.

### Fact

*The original iPhone featured cellular connectivity using GPRS and EDGE bands.*

## 2.5G and 2.75G

Between the second and third generations, lies GPRS (General Packet Radio Service) and EDGE (Enhanced Data rates for GSM Evolution) which are otherwise known as 2.5G and the 2.75G standards respectively. These transitional standards were later developed over the older 2G standard and basically provided more data speeds than 2G which was good enough to check email or load a webpage, but still fell considerably short of the network speeds 3G could achieve.

## 3G

In 2001, the age of 3G dawned. It was a big upgrade from the 2G standard but it was an upgrade. Nonetheless, the new standard had upgraded audio codecs and some part of the older GSM architecture. 3G also brought a new standard called the IMT-2000 (IMT – International Mobile Telecommunication). With the introduction of 3G, things got complex because there are many technologies which are compliant with the IMT-2000 standard, but the one most important is UMTS. UMTS, otherwise known as the Universal Mobile Telephone System, is the widely used 3G standard offering global roaming as it is globally recognised by a majority of countries. The upgrade in audio codecs saw enhanced audio and video



streaming, higher browsing speeds, faster data speeds, GPS support, video conferencing support and support for IPTV (TV through internet).

## 3.5 and 3.75G

Things started to evolve rapidly afterwards as the demand for faster internet speeds emerged. Soon, the 3.5G and 3.75G standards came into existence. These two standards otherwise known as HSPA and HSPA+ offered peak theoretical downlink speeds of 14Mbps and 168Mbps respectively. This was more than the 2Mbps downlink speeds 3G used to offer. While HSPA was metaphorically 3G on steroids, 3.75G was able to achieve much higher speeds and lower latency due to a new technology called MIMO (Multiple-input and Multiple-output), which set the ground for the 4G and LTE standards.

### Fact

*Some mobile operators are selling the 3.75G or HSPA+ plans as 4G because the real life speeds of the two are very close.*

## 4G

4G, otherwise known as IMT Advanced, is a complete overhaul from the earlier standards. 4G is currently deployed in two forms, one is WiMAX (Worldwide Interoperability for Microwave Access) and LTE (Long Term Evolution). Out of the two, LTE, has a better adoption rate across the globe. It is also due to the fact that WiMAX supports voice calling via VoIP only and requires new deployments, whereas LTE is made to work with existing deployments. LTE is also slightly faster than WiMAX.

**Key point:** LTE is the long term evolution of UMTS which was upgraded over the 2G standard.

LTE-Advanced is the latest chapter in 4G. It's faster than 4G and offers theo-



retical peak download speeds of upto 450Mbps over the theoretical peak download speeds of upto 300 Mbps achievable by LTE. This was a good enough reason to be excited about 4G finally coming to India. Although, you won't get the theoretical speeds due to various physical and technical factors, it is still good enough to be excited.

## 5G = 2G + 3G + 4G + Wi-Fi + ?

By now you must have realised one thing. Every new generation is better than the previous one, and not by a small margin. With 5G, the theoretical download speeds are expected to hit 10Gbps, making it 100 times faster than 4G. Also, like all previous generations, 5G will incorporate all its previous generations within itself. Additionally, it will also include specific new technology architectural changes that haven't been defined yet. Wi-Fi technology is also part of this heterogeneous equation and will play an important part in it. Wi-Fi derived technology will help the





## Live @Mars

DIYs are so fun, so is living on Mars. Here's how you can build your home on Mars.  
<http://dgit.in/City-Mars>

## Once in a decade!

Early to bed and early to rise, this Feb you will be able to see five planets with the naked eye, line up after a decade. <http://dgit.in/5LineUp>

standard achieve that higher data transfer rate. While none of the main organizations working on the upcoming standard haven't set a proper set of rules about what 5G should be, there is a wish list which is slowly gaining industry acceptance. These are some of the standards 5G is expected to meet:

1. 5G based technology is expected to handle a large amount data in tens of megabytes, catering to a group of thousands of people, without dropping or lowering network speeds. This would mean efficient and faster connectivity with speeds of upto 10Gbps.
2. It is expected to offer latency of less than 1 millisecond end-to-end round trip delay. This could mean a sublime VR experience over network. It is also important for mission critical tasks. for example, a doctor operating remotely on a patient via the help of a surgical robot.
3. Supreme bandwidth of a 1,000 times per unit area, which can support a hundred thousand simultaneous active connections. For this, 5G could harness or evolve upon the current and previous gen technologies such as 2G, 3G, 4G and Wi-Fi.
4. It is being perceived that 5G could bring 99.999% availability which could effectively mean the highest connection rates between the cell towers.
5. 5G is also suggested to cover 100% of the geographical area. This could essentially offer better connectivity over remote terrain and rural areas. If the upcoming standard is able to achieve this goal in real life scenarios, it will become the most important factor in the growth of developing nations.
6. One of the drawbacks with 4G is that it is not battery efficient, but 5G may change that. Research teams are working to reduce the power consumption by up to 90% at the terminal end, which will in turn make the whole process cost effective. The power consumption at a user's mobile level is also expected to go down which will make cellular devices last longer.

It is not guaranteed that these set requirements will be matched perfectly even by 2020, which is the expected year

we might have some concrete technologies to support the above mentioned requirements. Albeit, early tests and studies in the field suggest that we are close enough.

### Fact

*4G is likely to evolve and give us its transitional standards. 4.5G or as it is unofficially called LTE-Advanced Pro. In November 2015, HKT and Huawei successfully demoed the world's first 4.5G network offering 1Gbps of speed.*

## Why do we need 5G?

The answer to that is quite simple. 5G is vital to solve critical technological problems and keep up with future innovations. Another factor is the exponential growth in the user base, which is predicted to balloon beyond the seven billion mark by 2020. The current generation technology is not powerful or efficient enough to handle this massive growth, comprising mostly of traffic generated by video consumption these days.

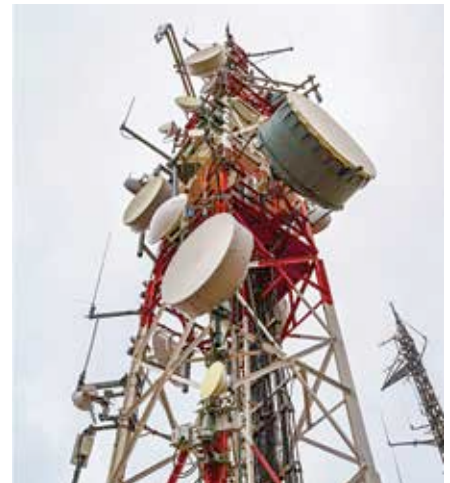
Beyond that, 5G could be the key to seamless integration of technology within our daily lifestyle, in a more automated world, where we strive to achieve by the end of this decade. Automated vehicles, IoT devices, 4K and 8K streaming, fast and responsive health care and emergency services, are just some of 5G's countless use-cases. To accommodate all these varying needs, 5G is required. It's benefits are far stretched out than any of the previous generations. From connecting billions of people to offering faster internet speeds, it has to do it all and do it well.

## How will it be different from 4G?

First, the speed. Yes, if boffins in the research lab are able to crack the mentioned wish list, we might get 10Gbps connection speeds by the end of 2020. This means a Full HD movie of around 8GB in size will take just six seconds to download instead of the 6-7 minutes it would take over normal 4G connections. 5G also brings the promise of better coverage, meaning lower call drop rates and more connected devices, currently a major problem in India. On top of that, 5G is expected to be quite flexible in terms of

its infrastructure, making it easier to be deployed under low-costs. If this becomes a fact, India will be able to connect at a more rapid pace than ever.

We can expect, that by 2020, technology will progress enough to make a bigger leap in remote computing and VR. It's also safe to presume that communication will become extremely real-time, offering a tactile internet, where you would be able to not only see and listen to it but touch and feel it as well. Also, IoT and connected devices such as wearables, smart home appliances and even connected vehicles will become a more intrinsic part of the



future. They will obviously require faster and more reliable networks to accommodate the surge in growth.

On a technical level, 5G is likely to use higher frequency bands which are currently being used by radar, satellites and military systems. This is the 30Ghz to 300GHz frequency band which is also called the millimeter-length wavelength. These waves are given consideration since they are open to huge amount of bandwidths and this spectrum is relatively less occupied compared to other spectrum bands in use. These can carry a large amount of data at higher speeds. However, millimeter waves are not perfect, their coverage is less than 300 metres, they don't penetrate walls and become woeful with changes in atmosphere such as rain.

Many researchers are working on newer technologies based on Wi-Fi and other waveforms such as FBMC (Filter





## Hello from the other side!

Scientific data projections suggest possibility of intelligent beings appearing as spots on KIC 8462852.  
<http://digit.in/AlienDots>

## Weiner's Documentary

A new documentary about the sexting scandal of Anthony Weiner is launched. Consider watching it.  
<http://digit.in/NewWeiner>

From the labs

Bank Multi-Carrier), UPMC (Universal Filtered MultiCarrier), GFDM (Generalised Frequency Division Multiplexing), f-OFDM (Filtered - Orthogonal frequency-division multiplexing). Besides these, there are other waveforms under consideration as well.

Currently, no single waveform can support the wish list 5G is vying for and it is to be believed that in the end, a combination of wavelengths or an adaptive wavelength will be able to provide the required results. This also means, that scientists will have to develop a whole new receiving and transmission architecture to accommodate all the features of the 5G standard. However, at the moment it's still under development.

While companies like Ericsson, Nokia and Huawei are hosting demos of what they have achieved so far, it is still the early days for the technology. As years go by and 5G comes to life, it will fall to service providers to push and adopt the technology further. This will require new infrastructure at every stage. After all, 5G mobile communications are supposed to handle almost 1,000 times more traffic, 10Gbps of speed and super low latency of under 1ms.

### How is the research going?

It all comes down to the research of the various aspects which will shape the mobile broadband of the future. As discussed, higher frequency bands are likely to be used and to counter the problem of smaller coverage, a new technology called 'beam-forming' has been widely accepted. The concept behind it is quite simple. Instead of broadcasting the signal in a wide area, concentrate the signal directly

to the target device. Some new Wi-Fi routers use this technology and we might see an evolved variant of the technology in the upcoming 5G standard. This technology proposes to focus radio interface into beams which will make them usable over long distances. These beams must be directed towards the end user and since the service is required to be mobile and available to many, the corresponding combination of hardware and software has to track and stay connected to each individual in the vicinity. This is quite a task, keeping in mind that each cell can only support a certain number of beams at a time and that too, without dropping the quality of the network.

### Fact

*A cell is simply a geographical area covered by a cellular telephone transmitter. It can vary from 1KM to 30KM in diameter*


The other technology which is being worked upon is MIMO (Multi-Input, Multi-Output). This technology requires the devices to be fitted with an array of antennas via which multiple radio connections can be made between the device and the cell tower. However, high-order MIMO has an issue, it causes radio interference. Hence, a new method or technology is required to transfer data via MIMO. This needs a new kind of radio network which can adjust its beam to take into account the specific orientation of the antenna at any given time. The idea of 3D MIMO is also being researched, which will allow beam-forming in 3D.

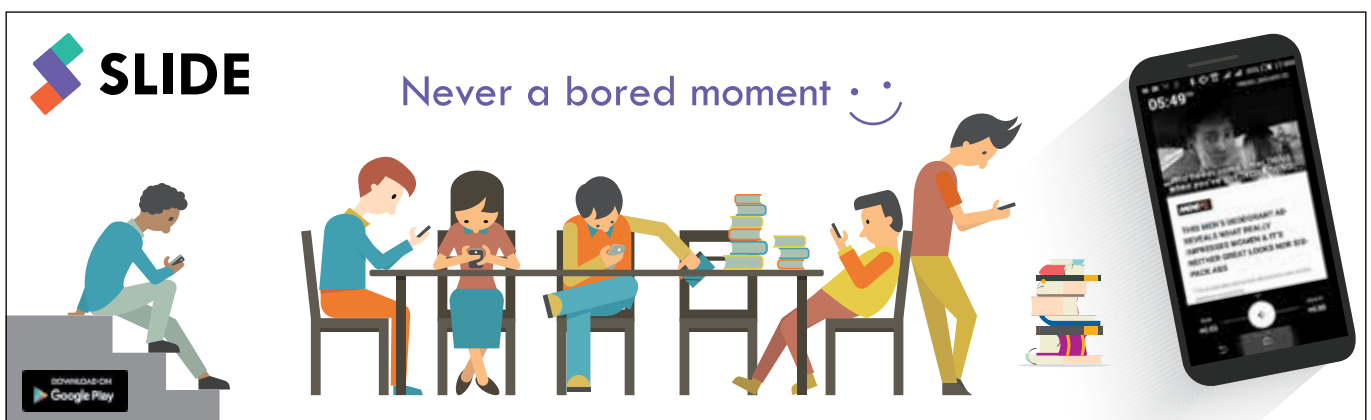
To counter the massive demands for data, an easier solution of dense networks is being considered. This means reducing

the cell size. By reducing the cell size, and lowering the range, spectral efficiency can be improved as the capacity increases. However, this will also mean more number of base stations will be required, again increasing the cost incurred on the operator. So, research is being done to improve that.

Currently, the existing cellular communication uses two full-duplex form, FDD (frequency Division Duplex) and TDD (Time Division Duplex), which essentially means using two different frequencies to transmit and receive. In FDD, the network uses different frequencies to receive and transmit and in TDD, the transmission and reception is done at different times. However, both these methods are not completely efficient. So, a new full duplex method is in the works which will allow simultaneous transmission and reception on the same channel at the same time.

Work is also going on Multi-Radio Access technologies which will essentially allow devices to talk to the various radio interfaces and access points at the same time. It is likely to involve Wi-Fi, higher frequencies and currently used frequencies into the mix.

As mentioned earlier, 5G is likely to work on a higher spectrum using millimeter waves but our current research is inadequate to make the system work. Beyond this, there are other goals such as "1ms latency" which needs to be achieved and for that, the technology needs to evolve. There are multiple research teams around the world trying to solve that issue and are going forward towards different research paths. We just hope that by 2020, they actually make it a reality. 



**SLIDE**

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## Hyperloop Transportation

The Hyperloop concept looks optimistic with the project already underway in California.  
<http://dgit.in/TravelFast>



## US Octopus

Find out what the Octopus of U.S. National Reconnaissance Office entails.  
<http://dgit.in/OctoUS>

# Did we really just find a long-lost giant planet?

**A sudden revelation struck recently, with 'conclusive' evidence of a ninth planet orbiting the Sun at the outer fringe of our solar system. The scientists behind this believe that the planet may be about four times larger than Earth, and almost 10 times its mass. How did we manage to miss it until now?**

Souvik Das  
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**I**n 2003, Caltech's leading astronomer Mike Brown spotted Sedna, a dwarf planet at the outer edges of the solar system. The planet had an elongated elliptical orbit, making its closest approach to the Sun at 76 AU (Astronomical Unit, where 1 AU = distance between the Earth and the Sun, that is 150 million kilometres), and the farthest it gets is 937 AU. Through the next 12 years, five more such planets were spotted, with similar orbits, giving rise to a speculation among scientists that there is a bigger entity out there possessing much greater gravitational influence.

After much chalkboarding and numerous astronomical calculations, the scientists came to a consensus on the presence of Planet X — a 9th 'planet', large enough to assert its gravitational dominance to clear out debris from its neighbourhood and hold dwarf planets in orbit. This is quite the standard sce-

nario for previous 'Planet X discoveries'. Ever since discrepancies were spotted in Uranus' orbit, there was debate on the existence of a planet large enough to create such a distinct impact. The mid-1850s finally saw the discovery of Neptune — a startling find at that point of time.

Percival Lowell's renewed quest for a farther Planet X ended with the discovery of Pluto, in 1930. However, Pluto was a dwarf — a small, rocky, icy planet with its orbit tilted out of the plane of the solar system. In comparison to the gaseous giants that precede it in our solar system, Pluto is a very odd celestial being. Perhaps, it is Pluto's constitution that made scientists think about its actual status at the outer edge of our solar family.

Brown, in 2005, spotted Eris. This object, like Pluto and Sedna, was 'tiny', far out into space, and had a similar setup like the two dwarfs. This suggested Brown that many other such worlds may exist at the outer edge of our solar system. When evidence led to the

spotting six such planets with a similar orbit system, Brown and his colleague Konstantin Batygin started discussing the reason behind such occurrences. They both came to a conclusion — something that astronomers have been trying hard to state for near centuries now, but have only ended up in blind alleys. Brown and Batygin exclaimed that it had to be a planet causing such a setup to occur and sustain itself.

Brown and Batygin have been cautious in their approach, taking time to study computer-simulated models, possible orbits, presence of nearby or passing stars, and came up with a theory. There is an actual ninth planet at the outer edge of the solar system, large enough to influence six other smaller bodies with its gravitational force. Since that is quite a significant amount of force, no dwarf planet can do that, as a result of which the mass and size of the planet were guessed. Adding to this, the planet has not been seen yet, meaning that it must have an orbit that is irregular, or massive, or in a different direction, or all of these at the same time.

The scientists presume, during the Solar System's young days of about 4 billion years ago, most of the gaseous planets on the outer edge of the Solar System had rocky cores. Had Planet X remained in the inner circles of the solar system, it would have possibly gathered up ice and gases to become a giant, like Jupiter. However, the space was so congested that all the planets could not have expanded to the fullest, and Planet X, with its outer orbit, got eliminated. At that time, the Solar System had a gaseous nebula on its outer edge, that deviated and slowed the planet down in its natural course, which may have given it the irregular elliptical



## Rise of the Drones

Everything is getting smarter day by day, drones don't want to be left out of the bandwagon. So here they come.  
<http://dgit.in/Smartflier>



## Nuke them up!

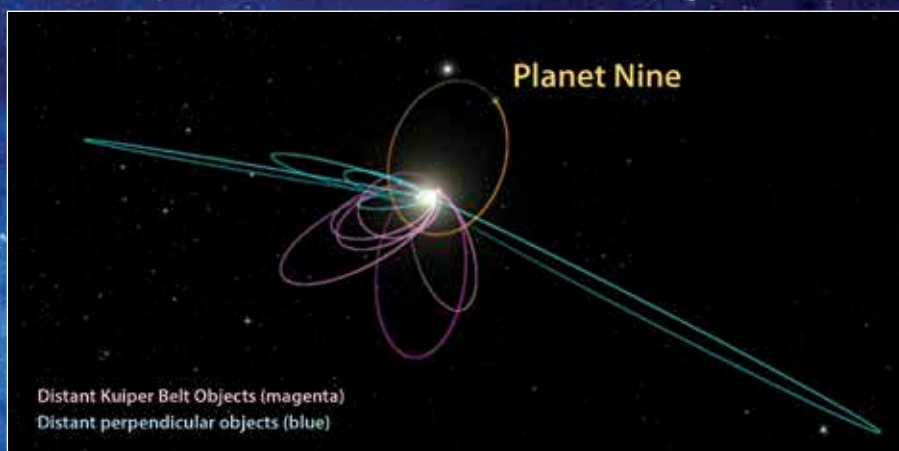
Russia plans to use nukes if it finds any asteroid heading towards earth, so sleep soundly.  
<http://dgit.in/NukeThem>

Space Age

### WILL BROWN AND BATYGIN'S CALCULATIONS HOLD TRUE, OR IS THIS YET ANOTHER INSTANCE OF SCIENTISTS BEING OVERENTHUSIASTIC?

The quest for Planet X has been prevalent, with Neptune's discovery being followed by Pluto's, and subsequently, discovery of similar-sized planets that happen to be a frequent occurrence in the Kuiper's Belt. Have we already explored the horizon, or does our Solar System really hold another massive planet?

Last month, a series of telescope dishes collectively called the Atacama Large Millimeter Array (ALMA) gave researchers what was believed to be a faint microwave glow of a rocky planet that was 300 AU away. At a distance of almost twice as far as Earth and Pluto are, did they really catch a faint sight of Planet X? Possibly not, seeing that Brown and Batygin's hypothesis points at all logical corners referring it to be a gaseous body. Nevertheless, Brown had previously disregarded it, saying that the ALMA had too narrow a field of view, to be able to distinctly and conclusively finding an object so far out in space.



Planet 9's highly elliptical path stands out from the rest



Kuiper Belt - where planets mysteriously appear from

orbit. Additionally, it spins in a direction away from the rest of the planets. While the eight solar system residents revolve around the Sun, only a point of Planet X's elliptical orbit comes near the Sun.

The evidence has not been spotted, and scientists predict that it may take as long as 5 to 15 years, until Planet X becomes visible. Owing to its massive, irregular orbit, the planet's perihelion (its

closest point to the sun) is at the aphe-  
lion (the farthest point from the sun) of  
the other six dwarfs. The elliptical orbit  
is set up in a completely different angle,  
away from the set of eight planets, and  
the group of plutoids, taking up to 20,000  
years to orbit the sun. It spends most of  
its time at around 600 to 1200 AU away  
from the Sun. It interacts with the six  
plutoids once every about 50,000 years,  
and these dwarf planets do cross its orbit.  
However, that does not occur when the  
planet is near enough to disrupt the gravi-  
tational location of any of these planets.  
As proof, the scientists calculated the  
mean position of the dwarf planets, point-  
ed the telescopes at them, and they were  
right about it. This led to further confirma-  
tion of Brown and Batygin's calculations  
that the giant may indeed be out there,  
lurking out of sight, possibly offended by  
being ignored for so long.

The scientists have stated a 0.007%  
chance, or one in 15,000 chances, for the  
clustering of the six planets to be coin-  
cidental, given the gravitational interac-  
tion at play out there. If the scientists do  
manage to catch sight of the long-lost  
giant that they are claiming to have found,  
this may have much wider impact on  
astronomy. For one, this will be the first  
"large" planet which will have an orbit  
that travels into the solar system, and  
heads wide out of the Kuiper Belt.

The scientists are out to welcome back  
one of our own, not counting the dwarf  
planets, or 'plutoids', as named since Plu-  
to was demoted to the status of a dwarf  
planet in 2006. Incidentally, it was Prof.  
Brown who passed the judgement on  
dwarf planets, leading to the unceremoni-  
ous relegation of Pluto. Will the man who  
once killed the emotions of a tiny planet  
bring a long-lost giant back home?



**Community**

Ever wondered how flagship phones are built for cheap? One of our readers has an explanation.

**It's Happnin'**

The recently launched dating app Happn crossed 10 million members and is aiming to make it big this year. <http://dgit.in/HappnIn>

# Weird Valentine's Day Gifts

It's time to celebrate your love for... well... your loved one and go from being the "it" couple to not being a couple at all with these weird valentines day gifts.

**The Girlfriend Experience**

There sure are a lot of sad Brazilian men out there. Sure enough to spawn a business. Say hello to NamoroFake, a website that specialises in 'the girlfriend experience'. Before you get your pitchforks out, this isn't what you're thinking. These guys put up a fake social media profile for your inexistent lady friend and help you pull off an elaborate charade.

**A part of You**

Valentines Day brings couples closer to each other. And if the sanctity of personal space means nothing for you lovebirds then you could lessen the gap even further by carrying a part of your loved one wherever you go. This custom jewellery include blood vials, tooth rings and hair bands. No, not the ones that hold hair but the ones made out of hair.

**Voodoo Curse**

This one isn't for your existing loved one but for those who've rejected your enchanting personality. You could always burn their clothes or throw paint on their car but that'll just make everyone see you as the bad person. Getting back should be more ... discreet. That's where Voodoo comes to your rescue. A simple spell is all you need. Voodoo-mama-juju.

**Cattle branding iron**

Often, you'll meet that special someone who leaves an everlasting impression. Or if you'd allow us to rephrase, a mark. And if you ever come across someone who's a little too eager to leave a mark then you might want to be wary of them using one of these cattle prods to leave a much more permanent mark.

**Hug-e-Gram**

It's said that long distance relationships hardly ever work. Like we've mentioned previously, this has spawned an entire industry and the Hug-e-Gram is one such innovatively sad device. When roses and skyping start getting a little stale, you'll need to take things to the next level and get physical. The Hug-e-Gram could very well save your relationship.

**Rakhi**

Ok, we get it. The magic is gone, they aren't the person you fell in love with, it isn't them it's you, blah blah blah. We get the message, you want to break up. Say no more, just grab hold of a Rakhi (the band and not the actor) and call him your bhaiyya. There can never be a better way to break up with your boyfriend than with a lethal dose of sanskaar!





## Girls, attention!

ModiFace is an augmented reality startup that's attracting eyes as it allows you to see how would this makeup look on you <http://dgit.in/ModiFace>



## Leica's Underwater Camera

Leica has launched its new waterproof camera that can dive upto 49 feet with you, costs a mere \$2950 <http://dgit.in/LeicaWPCam>

Unwind

# How we unwind



## Earworm of the month

Despite having avoided it like the plague, Drake's latest song finally got to us. We still can't say if it's the awkward dancing, the weird lyrics or the pimped out electric colours in the music video that made us loop this song over and over. We even went to the extent of synchronising playback on all machines just for the heck of it.

## Zip Zoom Vroooooom ...

After having watched countless videos, vines and GIFs of self-balancing scooters we were really eager to ride one of these. So we went all out calling for one. Our prayers were answered by IO Walk who sent their premium model and it, was, wonderful. Best part? These little things purr like super-cars.



## Electroshock Therapy

When a self-defence weapon enters the Digit Test Labs, what's the most efficient way of testing it out? Well, on each other of course! A new rite of passage has been established where men attest to their masculinity by being subjected to 9,000,000 volts of electricity. Except Ashish who kept wimping out initially.

## digit DIARY

Oh boy! The first month of the year sure was a doozy. It started off on an upswing with CES, the event that had most of us staying awake through the night looking out for gadgety goodness. We weren't disappointed ... at all. This year saw some really game changing technologies being unveiled at the immensely popular expo but the best part was the launch of ... NETFLIX! We were super stoked! Seriously, by the old Gods and the new, we were furiously fist pumping all the way through the keynote, at least that's how we'll remember it. So guess what happened when we realised that only 13.5% of the video library made it to India? There has never been an apt moment in our lives for the idiom, 'What goes up must come down'.

Just when even the most manliest of us felt at our weakest, the heavens parted to make way for this single ray of sunshine and thus, descended upon us, the angelic hover-board. If only words could describe how quickly it lifted our spirits to the extent we started clamouring around on this little board like ants around a drop of honey! Which reminds us, did we mention that Jayesh and Mithun ended up being artists actors! More on that later.

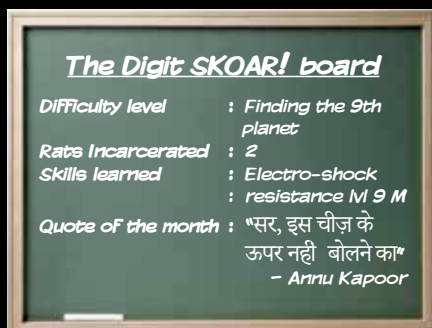
Just as CES came to an end, Siddharth noticed that graphics cards were selling for quite cheap in the US, so he promptly called up one of the guys returning from the US. He ended up saving a lot of money with the sweet deal only to have his victory dance snatched away by Abhijit as he ended up getting an even sweeter

deal on PayTM. The GTX 970 Club welcomes two new members, albeit one being a little sulky.

The younglings have been at it again. Pawan, the newest intern, spends all day hiding in one corner, thus, escaping the attention of the resident trolls. Ashish, on the other hand, ended up facing most of the flak. His vain attempts to mimic Mithun's buffoonery only resulted in added comic relief for the rest of us. The poor chap has been relegated to a corner of the office because he ended up creeping both Siddharth and Jayesh with his constant zoned-out stare-fests and clumsiness as the Pani-Zilla kept on knocking things around. Meanwhile, Nikhil has been secretly attending seminars on how to make it big on YouTube. You could expect the next big Indian YouTuber to emerge from the Digit Test Labs. The young-un will bring a balance of views to the channel. Unlike 'The Ant', of course.

Speaking of videos, Abhijit has been a little sneaky with the super compact Polaroid Cube+ as he went around discreetly recording everyone. The resulting videos have revealed some funny insights into what we do when no one is looking. For example, Ashish has a penchant for air-humping, Siddharth likes to pretend he's at a rock concert and Jayesh is into facial gymnastics.

It is a sad month for us as two more have joined the ranks of the League of Extraordinary Traitor-hood. Much can be said but shall not be, for these holy pages deserve less vitriol.



### The Digit SKOAR! board

**Difficulty level** : Finding the 9th planet  
**Rats Incarcerated** : 2  
**Skills learned** : Electro-shock  
**resistance** : 9 M  
**Quote of the month** : "सर, इस चीज़ के ऊपर नहीं बोलने का"  
 - Annu Kapoor



**App to detect Sarcasm**

God bless those Cornell University student to create an app that detects sarcasm.  
<http://dgit.in/SarcasmApp>

SONY

**Sony's Portable Projector**

Sony launches LSX-P1 a new projector that weighs about two pounds in weight, now thats a portable theatre.  
<http://dgit.in/PortableTheatre>



Every month we recognise the best article written by our community members and publish it here. Keep up the good work, Digitians!

# How does OnePlus manage to provide budget handsets?

The makers behind the Flagship Killer of 2014, OnePlus has been churning out phones at surprisingly cheaper rates. We look at the various factors that enable it



Rasbid Saleh

## Introduction

Right. I'm pretty sure you've all noticed it by now. OnePlus is all over the place. Their smartphones are all over the internet, and it's no surprise why. OnePlus has been able to release *very* budget-friendly smartphones since the company's rise in 2013.

And hey, I'm talking full-fledged flagships.

Not those mundane mid-rangers.

If you've been living under a rock for the past couple of years, let me recapitulate.

OnePlus was founded by Pete Lau, in the year 2013. If that name rings a bell, he was the vice president of the Chinese mobile giant, OPPO. So, how budget-friendly are their smartphones?

Their first smartphone, the OnePlus One, had the same (if not better) top-notch specs of the flagships of the year 2014. But, here's the catch. It was priced aggressively at just \$299 for their base model. That's less than half of the 2014 Samsung flagship, the Galaxy S5!

The OnePlus Two is no exception, priced competitively at \$329. They've also just recently released their new mid-ranger, the OnePlus X, which is available for \$299. So, I suppose you can probably see where this is going.

Today, I hope to tackle the question of *how* OnePlus manages to perform this seemingly impossible feat.

## Content

OnePlus' cheaper handsets are a culmination of a myriad of factors. To explain, there are a couple of business terms I would want to introduce. So, bear with me here. Let's begin with the most important one.

## Margins

Let's start this off with a basic question. What in the world are margins and why do they matter?

Margins are the difference in price between the cost of what it actually takes to make a product, and the price it's sold for. In layman's terms,

## Retail price – cost price = margins

Where, *retail price* is the cost at which the product is sold, *cost price* is the cost at which the product is manufactured, and that extra money left behind are the *margins*. Obviously, a company needs margins to make profit. But, not all of that profit is actually, well, profit. What I mean is, the extra money used by the company for research, marketing, and advertising, *especially* advertising, is added to the retail cost of the product.

A company like Samsung, for example, have way bigger margins for their flagships. Therefore, they can spend money on those extra needs. Plus, they can also increase their income.

In an interview with TechRadar, Pete Lau said, "*We are selling the phone at cost. We are able to do that by redistributing our costs to better benefit the user.*"

What Pete means is that they don't have over-the-top margins for their smartphones. Google is able to feed off their iconic and budget Nexus line because they earn through various other sources, such as the Play Store, for example.

But, then, how does OnePlus survive? Advertising, retailing, and marketing is where a company like OnePlus cuts corners. But, how do they do that? Let's go over their cost-cutting measures, shall we?







## New Netflix Series

Altered Carbon, a cyberpunk novel to be a Netflix series soon.

<http://dgit.in/AlteredCarbon>



## Portable Solarcharger

SolarTab is a tablet sized solar charger with an elegant and minimal design.

<http://dgit.in/SolarTab>

Digit Squad

## Advertising

Samsung uses their margins for various other constituents, like research, marketing, and retail stores. But, they go *way over their heads* on marketing.

I recently purchased the OnePlus X, and once people noticed a shiny new smartphone in my digits, they obviously wanted to know more about it. Most of the conversations went the same way. Here's a very accurate re-enactment.

"Hey, new smartphone, huh?"

"Yeah"

"Which one is that? A Samsung?"

"No. It's a OnePlus X"

"Wait, a what?"

I'm pretty sure you can guess what's at play here. Samsung spends most of its margins on getting the word out. They advertise their products like crazy. But, how does OnePlus get their product out into the world?

They use something called strategic marketing. OnePlus uses the internet as a medium to release their smartphones, and props to them for that. The internet is a place where billions of people commute, and OnePlus' idea is a good one.

They also rely on word of mouth for the mitigation of their smartphones. This is why you've seen their handsets floating around the web. They depend upon viral media marketing.

## Retailing

Companies have retail stores all over the world. Huge companies, like Samsung, utilise these retail stores for additional advertising. Obviously, they've to spend a little bit more from their margins, but hey, when has Samsung ever been lacking financially?

OnePlus dodges another bullet by cutting out the middleman. They do this by selling all their phones online. This works well as they're able to serve their consumers better, and they can cut down on costs, as well.

## Manufacturing

This is where OnePlus uses another tactic to prevent wastage. That's right, the dreaded invite system. The invite system is virtually the only con that OnePlus has had to face. So, why do they implement this seemingly unwanted technique?

You see, building a single smartphone requires resources and for a company like OnePlus, manufacturing a smartphone that will not sell in the end is a huge loss. So they make sure that every consumer needs one smartphones by using the invite system.

But, this also works the other way round. Making the smartphone harder to get, actually increases the value of the smartphone in the eyes of the consumer. This increases the consumer's perceived value. So, long story short, the invite system is kinda like a double-edged sword, really.

## Stock chipsets

Have you ever thought why budget smartphones are suddenly popular right now? The trend began a couple years ago. All the way back in 2011 AD. (That's ancient in internet time)

But, seriously, it has been 5 years!

Alright. So, I'm pretty sure you've heard of MediaTek, right? They're a major smartphone chipset manufacturer based in China. Most of the Chinese smartphones use their processors.

MediaTek began selling their leftover chipsets for dirt-cheap prices, and this trend goes on even today with other manufacturers as well. Now, I'm just speculating, but I'm pretty sure that the OnePlus X is cheap for this very reason.

The OnePlus X is powered by a Snapdragon 801 processor, courtesy of Qualcomm. The most recent one (at the time of writing) is the Snapdragon 810. The 801 series is based on the year 2014, and the 810s are 2015 material.

You can probably see where this is going. I suppose Qualcomm had some stock processors left, which they sold to OnePlus at a cheaper rate. By the way, did I mention that this is just a speculation?

## Conclusion

Well, now you know. So, keep an eye out for lesser-known companies like OnePlus, since Samsung is not the only manufacturer capable of building top-notch smartphones.

A culmination of the above factors affect the retail price of any product, be it a smartphone, or a hairdryer. Hopefully, you're now smarter than yesterday. 📱



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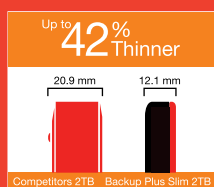




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